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"If You Didn't Mean It, Why Did I Feel It?": Comparing the Effects of Deliberate vs. Unintentional Ostracism

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“If You Didn’t Mean It, Why Did I Feel It?”:

Comparing the Effects of Deliberate vs. Unintentional Ostracism

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Biography

The author was born in Kokomo, Indiana, on June 23, 1994. She graduated in 2012 from Connections Academy High School in San Clemente, CA. She received her Bachelor of Arts degree in Psychology and Bachelor of Science degree in Professional Writing from Taylor University in 2016. In 2018, she received her Master of Arts degree in Psychological Sciences at DePaul University. After her graduation from the doctoral program, she will be transitioning to a role as a User Experience Researcher at Facebook in Seattle, WA.

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Abstract

Ostracism is a form of social exclusion characterized primarily by the experience of being ignored in a social situation. Ostracism is psychologically significant not only because it separates us from desirable social interactions but also because it provides information about how others view us. Investigations of seemingly deliberate ostracism have consistently shown that exclusion threatens people's sense of self; yet little research directly compares how consequences differ when people believe they were excluded deliberately versus unintentionally. Across five studies, we explored whether the ostracizer's perceived intent to exclude affected participants sense of self and their subsequent thoughts, feelings and behaviors. Due to scarce prior research, most comparisons were explored as research questions; however, we hypothesized that deliberate ostracism would generate greater feelings of exclusion, greater threat to basic self-related needs, and motivate greater behavioral withdrawal. In Studies 1 and 2, participants recalled a time in their life when they were excluded either deliberately or unintentionally. In Studies 3 and 4, participants were randomly assigned to a deliberate ostracism, unintentional ostracism, or control condition within a new, immersive paradigm where participants engaged with group members through an online chatboard. Recall paradigm results supported study hypotheses. Findings from the immersive chatboard paradigm were mixed: participants who were deliberately ostracized versus unintentionally ostracized felt more excluded and reported greater need threat but did not report less desire to affiliate with their ostracizers. Unintentionally ostracized participants did not report lower self-esteem than control participants but did report greater feelings of isolation and lower expectations for self-related need fulfillment

during an upcoming group task. Overall findings observed consequences for both deliberate and unintentional ostracism. Future research should continue to delineate the unique effects of unintentional ostracism, as understanding the contexts in which perceived intent threatens our sense of self remains important for predicting and addressing the everyday consequences of social exclusion.

Keywords: social exclusion, social ostracism, perceived intent, deliberate exclusion, unintentional exclusion, incidental ostracism, oblivious ostracism, sense of self, self-related needs

"If You Didn't Mean It, Why Did I Feel It?":
Comparing the Effects of Deliberate vs. Unintentional Ostracism

Social exclusion is a fact of life—at some point or another, we all experience feeling left out by others. A mundane example: you go online and see a photo of your friends having a great time together at a concert, and you wonder why you weren't invited. You read the caption on the photo and it is clear this event was planned several weeks ago, but you never heard about it. Or: you read the caption and you realize your friends just happened to run into each other at the event and were thrilled by the coincidence. The objective outcome of these two scenarios is the same; in both cases, your friends have enjoyed a social interaction together that you were not a part of. However, you probably perceived greater intent to exclude in the first scenario than the second. If you believe your friends deliberately left you out of a planned social event, you would likely feel hurt—but how do you feel when you think your friends' group hangout was coincidental? Though you may still experience a sense of exclusion and being left out, the experience might also have a different psychological quality than one of directed social ostracism. In this research, we ask: how is our sense of self affected differently when acts of exclusion appear unintentional as opposed to deliberate? The present experiments examine whether and how differences in the ostracizers' perceived intention to exclude affect our sense of self and our subsequent thoughts, feelings and behaviors.

Research literature has long-established that people are fundamentally social animals. Evolutionarily, people have relied on social bonds and group collaboration as important resources for survival (Baumeister & Leary, 1995). Many argue that humanity's deeply rooted need to belong has made people highly sensitive to any signs of

potential ostracism (Baumeister & Leary, 1995; Williams, 2012). When a person's connection to others is obstructed, such as when others exclude them from a group activity, people commonly experience social pain along with other negative psychological effects such as a reduced sense of belonging, control, self-esteem, and meaning in life (Buelow, Okdie, Brunell, & Trost, 2015; Williams, Cheung, & Choi, 2000). The reduced satisfaction of these four basic human needs has been observed even when the ostracism episode is relatively minor, demonstrating that at least in the case of social disconnection, "minor" cannot be interpreted as inconsequential (Böckler, Hömke, & Sebanz, 2014; Williams, 2012; Williams et al., 2000; Wittenbaum, Shulman, & Braz, 2010). Not only are ostracism episodes often highly threatening, they are also surprisingly commonplace. In one two-week-long diary study, participants recorded and described each time they felt ignored or excluded; on average, people reported approximately one ostracism episode per day, "making ostracism a part of everyday life" (Nezlek, Wesselmann, Wheeler, & Williams, 2012, p. 99). We might expect that given how frequently people experience ostracism, we would quickly become immune to its effects. To the contrary, Geller, Goodstein, Silver, & Sternberg (1974) proposed that our negative reactions to being excluded or ignored may be partially due to the fact that it "takes one by surprise… one's expectations as to the type and amount of attention one should receive in a social interaction are not fulfilled" (p. 542). In the face of everyday ostracism, people seemingly continue to expect social inclusion as the social norm for interpersonal interactions and perceive exclusion as a clear violation of norms (Dvir, Kelly, & Williams, 2019; Geller et al., 1974).

It is important to acknowledge in this discussion that the terms social exclusion, ostracism, and rejection are often used interchangeably in the literature yet are subtly distinct. Social exclusion involves "the experience of being kept apart from others physically or emotionally" and is most commonly used as the overarching umbrella term that includes both ostracism and rejection as subcategories (Wesselmann et al., 2016, p. 5). Ostracism refers to being ignored by an individual or group (a paucity of attention we could say), whereas rejection is characterized by "direct negative attention" that suggests a person's presence is not wanted (Wesselmann et al., 2016, p. 5). The level of ambiguity surrounding an experience should therefore be much higher for ostracism than for rejection, since less information is explicitly provided. An excellent illustration of ostracism's ambiguity can be seen in Geller et al.'s (1974) study where two confederates were instructed to ignore the real participant during a casual group conversation. To avoid raising the participant's suspicion and to make the interaction feel more natural, the confederates did not entirely ignore the participant's existence – rather, they ostracized the participant from the conversation more subtly by granting them minimal attention. The confederates looked at the participant infrequently while they were talking, responded only briefly to their comments, and interrupted the participant when they paused in the conversation. Despite the finding that ignored participants reported feeling much more alone, frustrated, and anxious than the included participants, none of the ignored participants called their conversation partners out on the behavior. Geller et al. (1974) speculates that this is because in order to conclude that one has been ignored, one must collect evidence across repeated incidents that supports this conclusion. In this way, being ignored differs from being insulted because:

> "one can point to a specific event that is insulting; however, it is more difficult to pinpoint a specific event responsible for one's feeling ignored. Ignoring is not an event, but a summation of events which must be interpreted and reconstructed. An insult is immediately visible and needs no interpretation" (Geller et al., 1974, p. 552).

Due to this ambiguity, it seems likely that victims of ostracism will deliberate over questions like "Was I really excluded? Was this situation accidental?" more so than people who receive direct messages of rejection (Williams et al., 2000). In this paper, we chose to study instances of ostracism rather than rejection specifically because of the ambiguity it affords.

While we know that both rejection and ostracism are painful experiences, some research suggests that ostracism can actually lead to greater psychological consequences than active negative social attention (O'Reilly, Robinson, Berdahl, & Banki, 2015). Data from controlled laboratory experiments show that when people were ostracized by a group (i.e., received no attention at all), they demonstrated lower need satisfaction, more negative moods, and stronger retaliatory intentions towards their group members than when they received direct punitive attention from their group (Van Beest & Williams, 2006). This finding is counterintuitive to most people's expectations. People in the workplace, for example, believe that ostracism is a less hurtful and more socially acceptable behavior toward coworkers than direct negative attention like harassment—and yet, ostracism has been found to more strongly affect employees' sense of belonging and is experienced more frequently than harassment (O'Reilly et al., 2015). Furthermore, longitudinal tracking of workplace data finds that it is ostracism—not harassment—that

predicts employee turnover three years after a negative workplace experience. Given ostracism's profound effects on people's sense of belonging and overall well-being, the experience of being left out and ignored (rather than outright rejection) remains a pressing area to study within social exclusion. A better understanding of how people's subjective interpretations impact their ostracism experiences may also facilitate interventions that could help diminish the psychological harm of exclusion.

Establishing the Context for Ostracism

Motives for Ostracism

Though researchers typically expect to observe strong negative effects following any social exclusion experience, people's subjective interpretation of the event is critical in determining their actual response. People often account for a wide range of individual and contextual factors in their attempts to make meaning out of being ostracized. Some factors that have been found to affect people's interpretations of ostracism, for example, include the strength of their current relationship with the ostracizers, the perceived relationship of the ostracizers to one another, and the target's expectations for future interactions with the ostracizers (Iannone, McCarty, Kelly, & Williams, 2014; Nezlek et al., 2012; Twenge, 2005). Researchers have also explored how the victim's reflective attributions of the event affect their immediate reactions post-exclusion, though most attribution research has focused solely on the question of causal clarity (i.e., "Do I have a reason for why I was excluded?"). People may, for example, ask themselves whether the exclusion had been personal, whether they had done something to deserve it, or whether it had been coincidental. When people are able to pinpoint the reason why they were

ostracized, their sense of belonging and self-esteem don't suffer as much as when the specific motive is unknown (Sommer, Williams, Ciarocco, & Baumeister, 2001).

The range of perceived motives for ostracism typically fall into a handful of categories: role-prescribed ostracism, punitive ostracism, ego-defensive ostracism, oblivious ostracism, or ambiguous ostracism (Nezlek et al., 2012). These five categories (see Table 1) were used during Nezlek et al.'s previously mentioned diary study on everyday ostracism. As participants recorded each experience of ostracism, they also described why they thought they had been excluded and were prompted to label the experience with one of the five given categories. Study results suggested that the perceived motive behind the exclusion was significant in determining the event's emotional and psychological impact. For example, participants responded less negatively to role-prescribed and ambiguous ostracism, both of which could easily be reinterpreted as "unintended or excusable," than they did to punitive, ego-defensive, or oblivious ostracism (Nezlek et al., 2012, p. 93). Although oblivious ostracism could also theoretically be interpreted as unintended, in this study people unexpectedly responded *most* negatively to these cases and did not excuse them. Nezlek et al. (2012) proposed that oblivious ostracism may commonly be associated with the perspective that one is "unworthy of [the] attention" of a higher-status individual, which may explain why this type of ostracism is not always viewed as blameless (p. 93). Perceived status may therefore be an important variable to account for when anticipating the effects of oblivious ostracism; for instance, experiencing oblivious ostracism at the hands of a higher-status individual may generate a much greater existential threat than experiencing oblivious ostracism at the hands of an equal-status peer.

The five categories used by Nezlek et al. (2012) provide a helpful basis for the initial conceptualization of ostracism motives; however, they are not the only conceivable motives for ostracism. For example, these categories fail to represent situations where people are ostracized because they possess unattractive qualities either physically or interpersonally (Baumeister & Tice, 1990). While some examples of this phenomenon may fall under punitive ostracism, in other cases, ostracism occurs because of people's desire to distance themselves from an undesirable person rather than to punish them. Perceived differences in other, more nuanced motives (i.e., "They don't like me" vs. "They don't respect me") should also be acknowledged, as they have been found to mediate people's behavioral responses to feelings of exclusion (DeBono, Corley, & Muraven, 2020).

Table 1

"Why was I excluded?" – Motive Attributions for Exclusion (Nezlek et al., 2012)

Motive	Definition	Example
Role-prescribed	Exclusion results from the norms and roles within a situation	A diner ignores a waiter while eating at a restaurant
Punitive	Exclusion is used to punish or indicate disapproval of the target's behavior	A team member who is burdensome to the group is left out
Ego defensive	Exclusion occurred to protect the ego of the ostracizer	A person gives his spouse the silent treatment after an argument because he fears that she will otherwise ignore him first
Oblivious	Exclusion occurred because the ostracizer did not notice the victim. The victim attributes the exclusion to their own lack of status or worth	An employee fails to return a greeting from a janitorial custodian because they failed to hear it
Ambiguous	Behavior was experienced as ostracizing but the ostracizer possibly did not intend it to be	A person feels left out during a group conversation but doesn't know if it was real exclusion or just in her own head

People's sense of belonging and self-esteem post-ostracism may also change depending on motive-related attributions, such as whether people believe that it was something about themselves that triggered the ostracism. For example, people do not feel as bad when they are excluded by two people who are already friends with each other as they do when they are excluded by two people who have just met for the first time (Iannone et al., 2014). A similar finding shows that people also do not feel as bad being excluded by two members of the same out-group as they do when one of the excluding group members shares the ostracized person's in-group (Wittenbaum et al., 2010). It would be going too far to term exclusion by people who are friends (or members of the same outgroup) as "role-prescribed;" however, the typical norms and roles of friendship certainly make exclusion by a pair of friends more conceivable and the potential motive more interpretable than exclusion by mutual strangers. In a situation like this, it may be easier to believe the ostracism occurred due to the nature of the ostracizers' relationship (e.g., "They just really like each other") rather than one's own attributes (e.g., "They must dislike me"). In general, people seem to feel the most threatened by exclusion when they think it is something about themselves that caused the ostracism versus when they think it is something about the ostracizer; ostracism has been found to be even less threatening when people believe it is due to the situational context (Nezlek et al., 2012).

In cases where a person is indeed excluded because of their individual behavior or traits, Baumeister and Tice (1990) suggest that the exclusion is likely due to one of three reasons: *(1)* the group member is incompetent or burdensome and fails to sufficiently benefit the group, *(2)* the group member violates the group's moral or social norms, or *(3)* the group member is deemed undesirable (either physically or interpersonally).

Interestingly, people often experience ostracism even in the absence of the motives outlined by Nezlek et al. (2012) and Baumeister and Tice (1990). The phenomenon of incidental, rather than instrumental, ostracism seems to exist as a simple learning mechanism where people experience natural reinforcement for choosing to interact with familiar partners over novel partners (Lindström & Tobler, 2018). This theory proposes that incidental ostracism occurs because people are motivated to maximize rewards and avoid punishment and will therefore instinctively seek out interaction partners who offer the greatest likelihood of rewards. At the same time, whenever a person randomly selects an interaction partner (e.g., talking to a new classmate on the first day of school), others are naturally excluded from the interaction. If the selected interaction goes well, it increases the person's motivation to repeatedly engage with the same partner because "any beneficial interaction with a specific partner will increase the expected value of interacting with this partner in the future" (Lindström and Tobler, 2018, p. 6). Therefore, those partners who are not chosen for interactions early on may eventually become ostracized through natural learning processes (which create path dependence) rather than through any fault of their own or through any vindictive intent from the ostracizers. Lindström and Tobler (2018) provided compelling evidence for these predictions by demonstrating through a series of four studies that ostracism frequently emerges from non-instrumental intentions rather than as an intentional group strategy to punish free-riders.

Attributions of Intent

"Why was I excluded?" is an important question to consider post-ostracism, but it is not the only attribution-related question worth asking. Arguably, people must first

make a higher-level evaluation: “Whose actions made me feel excluded, and did that person or people intend to leave me out?” The response to this question will likely lead to very different sets of plausible causal motives (e.g., “They didn’t like me” vs. “They didn’t notice me”), even across identical events. Ultimately, the pain of ostracism stems from a person’s perception that other people view a relationship with them as unimportant or unlikely to contribute value (Bucklet et al., 2004). Yet this conclusion is more difficult to make when it is unclear whether the ostracizer intended to communicate that message through their behavior. As a person evaluates their ostracizer’s intent, the question they are truly addressing may be, “To what degree does this event represent a threat to my sense of social belonging?”

Problematically, a large majority of in-lab ostracism studies rely exclusively on manipulations where it seems very likely that the ostracizers are aware that they are leaving someone out of their group. The widely used Cyberball paradigm, for example, places participants in a virtual ball-tossing game with two other remote participants (who in reality, are computer-generated players). In the exclusion condition, the other players throw the ball to the real participant only twice during the entirety of the game; the rest of the time, they throw the ball only to each another. In this context, it seems very reasonable for the ostracized person to assume the other participants are aware that they are behaving exclusively and are willingly engaging in that behavior. Though no study has directly explored how Cyberball players perceive their co-players’ intent, one study did find that the majority of Cyberball participants blamed their co-players for their ostracism, suggesting that participants viewed their co-players as responsible for the outcomes of their actions (Bozin & Yoder, 2008).

Real life situations of ostracism are often much more ambiguous than Cyberball. When you hear there was a party over the weekend that you didn't know about, did the host intentionally not invite you or was it just an oversight? Or let's imagine you try to make polite conversation with a coworker who remains fixated on their phone. Is the person deliberately ignoring you or did they just receive an important incoming text? To draw conclusions about intent in these situations requires one to interpret the ostracizer's perspective. As we argued earlier in this paper, because ostracism lacks the direct negative feedback that characterizes rejection, most ostracism experiences (even Cyberball) contain at least a degree of ambiguity as to whether the person is being purposefully excluded. The average interpretation of ostracism likely falls somewhere on a continuum between "clearly unintentional" and "clearly deliberate," depending on how much information the victim has about the situation and the other people involved, as well as how compelling that information is. Although people may acknowledge a degree of uncertainty in their evaluations, believing that one has likely been ostracized deliberately versus unintentionally arguably creates distinct psychological experiences—even if all other situational characteristics resemble one another (Jones & Kelly, 2010; Sommer et al., 2001). The key psychological and behavioral differences between these two types of ostracism experiences should therefore be directly compared through empirical research and experimental manipulations that focus directly on the role of intent-related attributions. The overarching question remains: do people find it more aversive to be the deliberate target of inattention or to be overlooked in receiving any attention at all? (Sommer et al., 2001).

Deliberate Ostracism

> *"It would be too easy to say that I feel invisible. Instead, I feel painfully visible, and entirely ignored."* ― David Levithan, from *Every Day*

To be intentionally ignored is to be deemed unworthy of attention. When a person is ignored, "one's opinions are unsolicited, comments unwanted, approval unneeded" (Geller et al., 1974, p. 541). In contrast to being forgotten or overlooked, the ostracizer who ignores has presumably taken stock of the victim's presence and then consciously chosen to deny the person of social attention. The silent treatment, where one member of a couple refuses to verbally (and often nonverbally) acknowledge the other, is an extreme example of intentional attention deprivation, and it often has devastating effects on the one being ignored (Sommer et al., 2001). We propose that during deliberate ostracism (such as giving someone the silent treatment), the ostracizer intends for the victim to be left out and actively contributes to this outcome. Deliberate ostracism therefore involves two components: responsibility (the ostracizer personally performs an action that contributes to the person feeling excluded) and awareness (the ostracizer is conscious of the fact that the person is being excluded in some way). Research exploring how people feel when they are "out-of-the-loop" (i.e., are uninformed of knowledge that is shared by others) has confirmed that when participants perceived their group members as intentionally vs. unintentionally withholding information, they assigned more causal responsibility for their information exclusion to their group members (Jones & Kelly, 2010). A similar study compared the effects of being kept out-of-the-loop in a game of Clue (by restricting the pieces of information distributed to the participant) and found that being out of the loop affected participants' psychological needs when group players were

responsible for withholding the information but did not matter when information was randomly distributed by a computer (Jones, Carter-Sowell, Kelly, & Williams, 2009b). These results suggest that it is the ostracizers' perceived intention to leave the participant out of the group game that mattered more than the actual experience of information exclusion.

Unintentional and Oblivious Ostracism

> *"But most days, I wander around feeling invisible. Like I'm a speck of dust floating in the air that can only be seen when a shaft of light hits it."* — Sonya Sones

Ostracizing behavior that is believed to be performed unintentionally has also been referred to as oblivious ostracism. In these cases, the ostracized person "perceives no intent or goal on the part of the ostracizer but simply a lack of regard" (Sommer et al., 2001, p. 228). Because the ostracizer is not mentally attending to the presence of the victim, the oblivious ostracizer may completely lack awareness of the fact that their behavior has impacted the other person in any way. For example, an employee may send out an important group email but accidentally leave off one coworker's email address – thus excluding him from the shared group conversation. The employee in this situation is fully responsible for their coworker's experience of ostracism but did not perform the action with any awareness of its consequences. Nonetheless, studies demonstrate that being forgotten (even under conditions where no ill-will is inferred) reduces people's sense of meaning to a similar degree as being actively excluded (King & Geise, 2011).

We would propose that oblivious and unintentional ostracism are not synonymous terms but rather that oblivious ostracism is just one example of unintentional ostracism.

Researchers suggest that oblivious ostracism occurs when the person being excluded believes the ostracizer has failed to notice them and attributes the inattention to their own insignificance (Williams, 2009a); however, victims of ostracism may alternatively attribute unintentional ostracism to the ostracizers' own distraction or carelessness (Jones & Kelly, 2010). It is worth noting that some ostracism experiences may be classified simultaneously as non-oblivious and also unintentional. For example, perhaps a person (let's call her Anna) does not receive an invite to a planned social event not because she is forgotten, but because the host didn't think she would be interested in attending. In this case, the host has Anna's presence actively in mind and intentionally did not invite her to the event but also did not intend for Anna to *feel* left out. In other words, the host had good intentions yet misjudged the situation. When discussing the intentions behind ostracism, it is crucial to remember that the objective reality of the situation (i.e., what the ostracizer actually intended) is not what matters most. Rather, perceptions of intent exist in the mind of the *victim* and are responsible for shaping their subjective reality—therefore, what is important in this situation is whether Anna believes the host's explanation for the missing invitation is genuine. If she does, then this situation will likely be interpreted as an experience of unintentional social ostracism.

In everyday life, interactions where ostracism appears relatively minor (e.g., leaving off an address from an email chain) may be the easiest to interpret as unintentional. Yet, similar to the King and Geise (2011) findings on forgetting, we know that it is possible for ostracizing behavior to be very subtle (e.g., diverted eye gaze, brief conversational pauses, gender-exclusive language) and still create feelings of disconnection, rejection, and reduced belonging in the targets (Koudenburg, Postmes, &

Gordijn, 2011; Stout & Dasgupta, 2011; Wesselmann, Cardoso, Slater, & Williams, 2012; Wirth, Sacco, Hugenberg, & Williams, 2008). Even commonplace behaviors that are ostensibly innocuous, such as checking one's cellphone during a casual conversation, is sufficient to make others feel ostracized (David & Roberts, 2017; Hales, Dvir, Wesselmann, Kruger, & Finkenauer, 2018; McDaniel & Wesselmann, 2021). In these cases, people's feelings of threat may stem not just from the behavior itself, but also from the learned association that these cues sometimes reflect a possibility for greater ostracism in the future (Baumeister & Tice, 1990). Or, in other instances, a person's relatively small actions may serve as a reminder that the target's identity represents a non-normative minority within society at large. For example, people in one study were asked to complete a survey in a cubicle where either a Christmas display was present or absent (Schmitt, Davies, Hung, & Wright, 2010). Participants who did not celebrate Christmas (Sikhs and Buddhists) reported more negative outcomes on the survey than participants who celebrated Christmas (Christians), and this effect was mediated by a reduced sense of inclusion. In moments like these, the people responsible for causing the feelings of ostracism may not be cognizant of the effects their behavior has caused. Their actions (e.g., averting their gaze, checking their cellphone, placing a Christmas display in an office space) appear to be relatively harmless and to label them "ostracizing" might seem extreme—and yet, these actions have demonstrated very real consequences in the feelings of exclusion they create. Interestingly, people's sensitivity to social ostracism is so strong that people have been found to experience thwarted psychological needs and reduced feelings of social acceptance even in the absence of a human actor capable of exclusion motives (Nezlek, Kowalski, Leary, Blevins, & Holgate, 1997; Zadro, Williams,

& Richardson, 2004). For example, participants who were ostracized in a game of Cyberball where they *knew* either that their two group players were computer generated or that the interaction was scripted still reported less fulfilled needs than included participants (Kothgassner et al., 2014; Zadro et al., 2004). Similarly, participants who watched their co-players during a Cyberball game but were unable to actively participate themselves (due to alleged technical difficulties) also showed greater brain activation than included participants in areas of the brain where activity is correlated with self-reported distress (Eisenberger, Lieberman, & Williams, 2003). Therefore, we cannot forget that ostracism often exerts a powerful psychological influence, even in the absence of perceived ill-will.

Comparing the Effects of Deliberate and Unintentional Ostracism

During both deliberate and unintentional ostracism, the distress felt by the excluded stems from being "denied involvement in interpersonal exchange" (Böckler et al., 2014, p. 147). However, few studies have attempted to compare how an ostracizer's perceived intentions directly affect people's psychological and behavioral response to exclusion. In Sommer et al.'s (2001) studies where people recalled times that they experienced the silent treatment or were generally ignored, those who perceived their ostracizers as simply not noticing them reported greater threats to their sense of belonging, self-esteem, and meaningful existence than those who recalled times of intentional ostracism. In these studies, intentionality was not measured directly but was coded by the researchers whenever the ostracized person mentioned a potential motive for the ostracism in their written narrative (e.g., the ostracizer's desire to punish, protect their own ego, or follow a role-prescribed interaction). The authors hypothesized that

being able to understand why a distressing event occurred helps people better cope with the event. The study outcomes supported this hypothesis, both in the previously mentioned finding that being overlooked was more threatening than being intentionally ostracized but also in the finding that participants who wrote narratives coded as causally unclear (i.e., the victim believed the silent treatment was intentional but didn't understand why they were receiving it) experienced greater threat than those who understood why they were being ostracized. While Sommer et al.'s (2001) research provided a promising first look into how perceived intent may influence reactions to ostracism, it relied exclusively on people's self-reported experiences and did not attempt to experimentally manipulate people's perceptions of the ostracizers' intent.

Other research on this topic has come from the area of information exclusion, a type of exclusion that mirrors the effects of ostracism by reducing people's basic psychological needs (Jones et al., 2009). As previously mentioned, experimental paradigms have demonstrated that experiencing information exclusion reduced participants' psychological needs when group members deliberately withheld the information but not when the information was randomly withheld by a computer (Jones et al., 2009). Jones and Kelly (2010) made an even stronger case for the importance of perceived intentions by demonstrating that this pattern of results remained identical even when real group members were involved in both conditions: out-of-the-loop participants suffered need threat only when group members were believed to act intentionally to withhold information but not when they were believed to act without the intention to exclude.

It is also sometimes possible for ostracism to be both unintentional and preventable (e.g., accidentally leaving someone off of an email chain). When ostracism was perceived to be unintentional *and* the victim believed that it could have been prevented, out-of-the-loop participants blamed their group members more for their information exclusion and also reported less basic need satisfaction (Jones & Kelly, 2010). Findings from another study indicate that people who imagine experiencing an episode of preventable ostracism also report more social pain than those who imagine a scenario where their ostracism was unpreventable (Doerner, 2014). Importantly, these information exclusion paradigms involve an example of unintentional exclusion that is rather distinct from the other examples of ostracism discussed previously. Therefore, these experimental findings suggest that in this context of information exclusion, people will feel the worst when their ostracism appears deliberate, will be less impacted when ostracism is unintentional but preventable, and will be the least affected when ostracism is both unintentional and unpreventable. It is still unknown whether this pattern will hold if tested with paradigms of social ostracism where exclusion stems specifically from the ostracizer's lack of awareness rather than lack of desire to exclude.

Another observation worth noting is that it is possible for people to assign very different levels of personal significance to ostracism that appears to be accidental. As Williams et al. (2002) explains, "unintentional ostracism may be perceived to be relatively meaningless (e.g., 'the other person did not hear me') or extremely self-relevant (e.g., 'the other person thinks so little of me as to not notice my existence')" (p. 749). In most cases, it seems likely that deliberate ostracism will result in stronger negative effects than unintentional ostracism; however, in some instances unintentional

ostracism may feel worse if it prompts a person to reflect on their existence as meaningless to others.

Not Just a Question of Degree. If differences do in fact exist between deliberate and unintentional ostracism experiences, one potential factor that may explain these differences is the intensity level of the ostracism experience. Hypothetically, the greater the intensity of the experience, the more difficult it becomes to believe that the ostracizer performed the behavior without awareness of its consequences. In everyday experiences of ostracism, these variables may frequently correlate. Although laboratory experiments can control for both perceived intent and event severity, it is worth considering whether the degree of ostracism creates meaningful differences in need threat. When Williams et al. (2000) compared Cyberball ostracism that was mild (participants received 20% of ball tosses from other players instead of 33%) vs. severe (participants received 0% of ball tosses from other players), their results indicated that degree mattered across some needs but not others. The more extreme the ostracism, the more participants' sense of belonging and self-esteem was reduced; however, participants' sense of control and meaningful existence were not affected. Other rejection research suggests that once exclusion passes a certain threshold in its perceived intensity, extreme rejection may not impact participants' self-esteem, emotional reactions, or ratings of the rejector any more than mild rejection (Buckley, Winkel, & Leary, 2004). In light of these mixed findings, research investigations should ideally control for the extremity of the exclusion when designing comparisons between deliberate and unintentional ostracism. On the other hand, it is interesting to note that if an experimental paradigm varies only in the provided interpretation of ostracism (and not in the ostracizing event itself), it is possible that

perceiving exclusionary intentions could directly lead people to perceive deliberate ostracism as more intense than unintentional ostracism.

The Role of Individual-Level Factors

When considering how the effects of social exclusion might differ based on perceived intent, another factor to consider is how individual traits influence people's subjective interpretations. Two traits potentially relevant to this research discussion include individual levels of rejection sensitivity (RS) and loneliness. Rejection sensitivity is often defined as a hypersensitive disposition where one "anxiously expects, readily perceives, and overreacts to rejection" (Downey & Feldman, 1996, p. 1327). Rejection sensitivity is believed to develop over time based on early experiences with rejection from family and caregivers. Previously, people high in RS were found to be more likely to interpret ambiguous behaviors (such as a romantic partner "acting aloof") as representing intentional rejection (Downey & Feldman, 1996). It is therefore possible that people high in RS may also interpret and respond to any experience of ostracism as though it was deliberate.

Previous research has demonstrated that rejection sensitivity moderates how people respond to direct rejection. For example, people high in RS engaged in more aggressive behaviors after rejection than did people low in RS (Ayduk, Guyrak, & Luerssen, 2008). However, some evidence suggests that high RS levels do *not* influence participant responses to ostracism paradigms like Cyberball. For example, high RS was not linked to differences in healthy participants' physiological stress reactions to ostracism or to differences in physical pain processing post-ostracism (Beekman, Stock, & Marcus, 2015; Bungert et al., 2015). Nonetheless, other research has suggested that

when people high in RS are ostracized, they may experience a greater sense of threat to the self that then motivates behaviors meant to restore a meaningful sense of self. A recent study by Renström**,** Bäck, and Knapton (2020) supported this hypothesis by demonstrating that when people high in RS were ostracized, they were more likely to accept an invitation to engage with a politically radical and violence-oriented group post-ostracism (as compared to people high in RS who were not excluded).

Alternatively, individual levels of loneliness (i.e., the negative feelings caused by a discrepancy between one's ideal versus actual social relationships) may also affect how people interpret social exclusion (Perlman & Peplau, 1981). Loneliness is more commonly thought of as an outcome of exclusion rather than a moderator for how people react when excluded. However, the differential-reactivity hypothesis proposes that loneliness may actually alter not only the perceived presence of stressors in the environment but also their perceived severity (Cacioppo, Hawkley, & Berntson, 2003). Lonely people, for example, may demonstrate a hypervigilance to social threat in order to protect themselves from further social harm—this hypervigilance may reasonably include a higher sensitivity to signs of possible social exclusion (Hawkley & Cacioppo, 2010; Wesselmann, Wirth, Mroczek, & Williams, 2012). Previous research has already demonstrated that lonely people engage in greater social monitoring of social information in general (including people's emotional facial expressions and vocal tones) (Gardner, Pickett, Jefferis, & Knowles, 2005). It has not yet been explored whether this greater social monitoring may also result in greater attunement to situations of unintentional ostracism specifically, which in real world scenarios may contain more subtle exclusion cues than deliberate ostracism events.

Additionally, lonely people have been found to make more self-defeating (rather than self-serving) attributions by "attributing [their own] social success to unstable and external factors and social failures to stable and internal factors" (Vanhalst et al., 2015, p. 934). These self-defeating attributions, in turn, may heighten the psychological consequences of exclusion. In line with this hypothesis, one study found that lonelier individuals reacted more negatively to Cyberball ostracism (Wesselmann et al., 2012). Researchers in another study found that adolescents who spent more time with their friends showed less fMRI activity in regions of the brain associated with negative affect and pain processing when they were ostracized in Cyberball—two years *after* their social activity levels had been reported (Masten, Telzer, Fuligni, Lieberman, & Eisenberger, 2010). A third study similarly showed that chronically lonely adolescents experienced more negative emotional responses to ostracism—and also demonstrated that the chronically lonely were more likely to attribute this exclusion to internal and stable traits rather than coincidence (Vanhalst et al., 2015). Loneliness, like rejection sensitivity, might therefore serve as an important moderator in determining which individuals experience a sense of exclusion most strongly – and whether their subjective experience is significantly impacted by perceptions of the ostracizer's intent.

Behavioral Responses after Ostracism

After people experience singular or relatively temporary episodes of ostracism, Williams et al. (2000) suggests that they will attempt to refortify their threatened needs as soon as possible. In other words, people should engage in behaviors that will help them recover their sense of belonging, self-esteem, control, and meaning in life. Because there is no single method guaranteed to achieve this goal, people are expected to tailor their

approaches depending on which specific need was most threatened (Williams, 2012). Behavioral responses to ostracism can include attempts at reaffiliation, social withdrawal, demonstrations of effort or competence, and acts of aggression (Wesselmann, Ren, & Williams, 2015).

Reaffiliation. In the face of ostracism, one's need for belonging is often the most immediately and severely threatened. To repair a damaged sense of belonging, people might respond to initial signs of ostracism by working extra hard to regain group status and approval. Sommer et al. (2001) found evidence through their written recollection study that participants who recalled an experience of oblivious ostracism (where they felt unnoticed by their ostracizers) were also more likely to attempt reaffiliation with others after ostracism as compared to those who experienced any other type of ostracism (e.g., punitive, role-prescribed, defensive). Notably, people's reaffiliation attempts were not necessarily directed at those who had ostracized them. In the pursuit of restorative social connection, ostracized individuals may view new social partners as a safer option to approach than the perpetrators of the initial exclusion. When paired with new group members after experiencing either exclusion or inclusion, ostracized participants have demonstrated stronger proximity seeking behavior than included participants by mimicking both the physical movements and the linguistic style of their new conversation partner to a greater degree (Lakin, Chartrand, & Arkin, 2008; Sommer & Bernieri, 2015). People who were excluded have also demonstrated a greater interest in meeting and working with new people and were more generous in their evaluations of new partner's interpersonal traits (e.g., how nice and friendly they were). However, this trend in positive interpersonal perceptions and behavior toward others was not observed in

reactions toward the person who did the rejection (Maner, DeWall, Baumeister, & Schaller, 2007).

Other research, however, suggests that attempting to reaffiliate with one's ostracizers is still a common response (Böckler et al., 2014; Williams & Sommer, 1997; Williams et al., 2000). In one ostracism study that used a shared eye gaze task, each group member received their next turn only once another group member made eye contact with them (Böckler et al., 2014). Study results found that when the participant was ostracized by their group members by being denied eye contact, participants remained engaged throughout the task and repeatedly attempted to reintegrate themselves into the game by gazing longer at their non-responsive group members' faces. Participants may also demonstrate greater obedience and conformity to group norms in an attempt to reaffiliate after ostracism (Carter-Sowell, Chen, & Williams, 2008; Riva, Williams, Torstrick, & Montali, 2014). Participants who were ostracized during a game of Cyberball, for example, were more likely than included participants to conform in a subsequent task by selecting an incorrect answer to a geometric puzzle after five other group members also selected the incorrect answer (Williams et al., 2000). In this paradigm, however, it is unclear whether participants believed they were conforming to the judgments of the same individuals who excluded them or to a new set of group members. Yet another study found that participants who succeeded in engaging further with their ostracizing group members (by inserting themselves into the group conversation) were more likely to feel positively about themselves despite the initial information exclusion they experienced (Wittenbaum et al., 2010). The collective evidence suggests that people frequently try to reengage socially with others after

experiencing social exclusion, and this behavior may serve an adaptive function by helping restore a sense of social belonging.

Withdrawal. Alternatively, when the experience of exclusion is too self-threatening or the potential of reaffiliation with the group seems highly unlikely, people may choose to withdraw from social situations rather than risk additional social pain (Dewall & Richman, 2011; Molden, Lucas, Gardner, Dean, & Knowles, 2009). For example, Geller et al. (1974) observed that when people were consistently ignored during a group conversation, their verbal attempts to participate steadily declined throughout the course of the conversation as it became clear that their comments would not be acknowledged. Though avoidance behavior after ostracism has been studied less than affiliative or antisocial behavioral responses, seeking solitude may serve a helpful self-protective function that allows the excluded to put distance between themselves and the source of threat. In several empirical investigations, participants were ostracized in a game of Cyberball and then asked to indicate their preference for team members for the next game (Ren, Wesslemann, & van Beest, 2020; Ren, Wesselmann, & Williams, 2016). Ostracized participants reported a greater desire to play an upcoming game alone than did included participants and also expressed less interest in playing the upcoming game with the same group members who ostracized them. However, ostracized players were equally interested (as compared to included participants) in playing an upcoming game with new group members. These results suggest that while ostracized individuals may desire withdrawal as a way to recoup after ostracism, they may not view withdrawal as the only viable means for psychological recovery. Further research is needed to determine the

additional circumstances under which ostracized individuals prefer to socially withdraw versus approach new social contacts.

Demonstrating Effort and Competence. Baumeister and Tice (1990) proposed that people may also attempt to minimize their negative experience of social exclusion by "engaging in achievement-oriented behaviors" in order to prove "their ability and willingness to contribute to the group" (as cited in Williams et al., 2000, p. 754). Contributing meaningfully to a shared group performance could potentially restore a slighted member's group status by demonstrating their instrumental value and their desire to work toward the group's common good. Williams and Sommer (1997) explored whether ostracized individuals were more likely to either engage in social loafing or socially compensate (by investing more effort) on a collaborative group task with their ostracizers. Interestingly, their results indicated gender differences: women socially compensated on a collective group task after ostracism while men socially loafed. Qualitative responses indicated that women were more likely to attribute the ostracism to their own failures and consequently attempted to restore their belonging in the group through greater task effort, whereas males more often claimed that their ostracism was self-selected and reduced their engagement in the group task as a way to save face. More recent research has successfully replicated the Williams and Sommer (1997) study but shows that the gender effect disappears when participants' social status is manipulated (Bozin & Yoder, 2008). This effect was driven by changes in the male behavior: when men believed they had higher social status than their group members, they no longer felt the pressure to save face through social loafing, and they consequently contributed as much to the collaborative group task as women. Bozin and Yoder (2008) also found

evidence that other individual characteristics (e.g., level of self-monitoring, efforts to be reincluded in the group) impacted the likelihood that participants would engage in social loafing, suggesting that factors beyond gender itself were driving the effect observed by Williams and Sommer (1997). Importantly for the purposes of the current research, the Williams and Sommer (1997) study did find that ostracized participants overall reported working harder on the group task than they did on the individually-scored task. Therefore, highlighting one's effort and task contributions may be just another strategy for reaffiliating with the group.

However, even if an excluded person did not want to reaffiliate with their ostracizers, demonstrating personal achievement could still prove psychologically useful. When an excluded person is able to prove their competence, it provides evidence (to themselves and to others) that they possess traits that will be desirable to other potential groups, which could help restore their damaged sense of belonging and self-esteem. Williams and Sommer (1997) provide some support of this hypothesis by finding that men (but not women) demonstrated greater effort on an individually-scored task after being ostracized compared to being included. Their data also indicated, however, that individually-scored performances in the exclusion and control conditions did not significantly differ from one another; therefore it is unclear from this study whether exclusion increases or inclusion reduces the pressure to individually perform in front of others.

A more recent exploration of the relationship between social exclusion and task performance found that people who were ostracized performed worse on an individual anti-saccade eye gaze task (compared to included participants) when they believed their

ostracizers were unaware of their performance; however, ostracized individuals demonstrated greater motivation to perform well (compared to included participants) when they believed their performance score could be compared with their group members after the task (Jamieson, Harkins, & Williams, 2010). The more participants' sense of belonging was threatened during exclusion, the more motivated they were to perform well on the group task—notably, individual levels of control, self-esteem, or sense of meaning in life did not mediate the effect of ostracism on task motivation. Because participants did not have the opportunity to self-report any motivations after the task, however, it remains unclear whether participants wanted to demonstrate their own competence in order to reaffiliate with the group that had excluded them or to restore their sense of belonging through another avenue (e.g., proving that they possessed skills that would make them desirable group members to others).

Aggression. Many ostracism paradigms in the lab are intentionally designed so that no matter what the ostracized person does or says, they will be continually ignored during an activity by their confederate group members or computer-generated coplayers (Williams et al., 2000; Williams & Sommer, 2001). In the aftermath of such powerlessness, aggressive retaliation towards one's ostracizers or even innocent bystanders is one method for the excluded to restore their own sense of control over their environment. In a review of the past two decades of research on ostracism and aggression, controlled laboratory experiments have collectively found that "ostracized participants give more negative evaluations to job candidates (Twenge, Baumeister, Tice, & Stucke, 2001), choose more unappealing snacks for their interaction partners (Chow, Tiedens, & Goyan, 2008), give louder blasts of white noise to their interaction partners

(Gartner, Iuzzini, & O'Mara, 2008), and allocate more hot sauce to a partner who dislikes spicy food (Warburton, Williams, & Cairns, 2006) than do included participants" (Ren, Wesselmann, & Williams, 2018, p. 34). Supporting the link between thwarted control and aggression, one study demonstrated that when people who had been socially excluded were given an opportunity to restore their sense of control through another means, they did not behave any more aggressively toward their group members than people who had been included (Warburton et al., 2006).

It should be recognized, however, that social norms typically inhibit people from showing aggressive behavior; therefore, the experience of ostracism must pose a strong enough threat that it overrides adherence to these norms. Not all laboratory paradigms may be long enough or severe enough to elicit this degree of threat; and consequently, differences in aggression may not always be observed after laboratory ostracism. Though Buckley et al. (2004) was investigating reactions to social rejection rather than social ostracism, their research found that people who experienced more extreme rejection did not demonstrate any greater aggression than people who experienced mild rejection; however, their self-reported inclination to aggress towards their ostracizer did increase. Given that this pattern may also hold true for responses to social ostracism, aggressive tendencies or desires may potentially serve as a more informative variable to investigate during most laboratory exclusion studies than actual aggression.

Another possible explanation for the link between social exclusion and aggression is that social exclusion may activate greater perceptions of hostile intent. For example, in one study, participants were first told they were the type of person who was likely to spend their future alone (exclusion condition) and then went on to play the prisoner's

dilemma game with another participant. Excluded participants were more likely than included participants to adopt defensive behavioral strategies that seemed to assume their coplayers would be noncooperative (Twenge, Baumeister, DeWall, Ciarocco, & Bartels, 2007). Rejected participants are also more likely to interpret ambiguous information as aggressive, demonstrating that exclusion may activate a hostile cognitive bias (DeWall, Twenge, Gitter, & Baumeister, 2009). DeWall et al. (2009) also demonstrated that perceiving others as hostile or antagonistic was predictive of actual aggression towards others, even when targets were not involved in the original act of exclusion. Therefore, aggression after exclusion may be fueled both by personal efforts to restore a sense of control, as well as greater perceptions of social hostility.

Rationale

A person's cognitive appraisal and interpretation of their ostracism experience influences how they react to being excluded. However, prior research has primarily focused on cognitive interpretations related to the "why" motive behind the exclusion (e.g., "Was it because I was unlikable? Was it because they are a mean person?") rather than attributions of the ostracizers' intent to exclude (Baumeister & Tice, 1990; DeBono et al., 2020; Nezlek et al., 2012; Sommer et al., 2001). Few studies have empirically investigated this second component of intent, and those that have almost exclusively explored the question in the context of information exclusion (Doerner, 2014; Jones et al., 2009; Jones & Kelly, 2010). The current research builds upon the existing literature by using two distinct methodologies to investigate how people's reactions to exclusion differ when they believe they were ostracized deliberately versus unintentionally. In the proposed series of studies, we explore how these intent-related attributions affect

people's feelings about themselves after exclusion and their corresponding behaviors toward the people who ostracized them.

The last two decades of research make it clear that even minor experiences of ostracism have psychological consequences. Ostracism is a significant psychological experience not only because it separates us from desirable social interactions, but also because it provides information about how others view us—which then informs our personal sense of self (Graupmann, 2018). When we perceive that others do not view us as a valuable interaction partner, it can lead us to feel that we do not belong, that we do not have the ability to affect outcomes around us, that we are worth less, and that our lives have less meaning (Williams et al., 2000). Research has already demonstrated that seemingly deliberate ostracism poses a strong threat to our sense of self within these areas, but does seemingly unintentional ostracism threaten our self-view in the same ways? Considering the reported prevalence of non-instrumental ostracism within daily life and the degree of ambiguity that often surrounds exclusion intentions in real-world settings, this research can help us better understand the psychological effects of being left out even when there is seemingly no ill will on the part of the ostracizer (Lindström & Tobler, 2018). Understanding how perceived intent differentially threatens our sense of self will help us better predict people's behavioral motivations in response to ostracism. Determining the importance of intent-related attributions may also benefit the design of interventions that could reduce the negative effects of being excluded by helping people reframe their ostracism experiences more constructively.

The Current Research

The current research investigated through five studies how reactions to exclusion differed based on the ostracizers' perceived intent to exclude. In Studies 1 and 2, we explored the relationship between these variables in real world settings by using an autobiographical recall paradigm where participants described a previous exclusion experience (where either the person intended or did not intend to leave them out). In Study 3, we identified the effects of a mundane (seemingly unintentional) experience of ostracism through a new triadic group interaction paradigm where participants found that their two group members had more in common with each other than they did with the participant. In Study 4, we used the same paradigm to compare the condition where the group members' intent to exclude was ambiguous to a new condition where the group members' intent to exclude seemed clear. Finally, in Study 5, we conducted a validation study to confirm that the paradigm conditions used in Studies 3 and 4 successfully manipulated perceptions of the group members' intentions to exclude the participant. Across all studies, we investigated the effects of these conditions on participants' self-reported fulfillment of their basic psychological needs (i.e., need for belonging, control, self-esteem, and meaning in life) and their behavioral responses toward their ostracizers. Additional measures unique to each study are described in the methods section.

Hypotheses and Research Questions

Given the scarcity of research that directly compares experiences of unintentional and deliberate ostracism, this research was to some degree exploratory. Therefore, while the existing literature allowed us to construct with confidence several hypotheses related to deliberate ostracism outcomes, many of the unintentional ostracism comparisons were posed as research questions. When considering how the effects of unintentional ostracism

might compare to the effects of deliberate ostracism and the control condition, we outlined three general outcome patterns for which reasonable justifications existed. First, we could have observed patterns of *incremental growth*, where the relationship is linear as it moves from the control to unintentional to deliberate conditions. In this pattern, negative relational outcomes become more extreme as perceived intent to exclude increases. Alternatively, we could have instead observed patterns of *resolved threat*, where perceptions of non-intent alleviate the threat of ostracism so that the control and unintentional ostracism outcomes do not significantly differ from one another. Lastly, for some variables (like the desire to affiliate with one's group), we could have observed *overcompensation*, where unintentional ostracism results in the most extreme response as compared to the control and deliberate ostracism. For example, a person might work extra hard to affiliate with their group because they want to decrease the possibility of future exclusion; whereas control participants are not experiencing exclusion threat, and deliberately excluded participants may not view reaffiliation as a viable strategy. As the current literature did not provide sufficient evidence to allow us to predict conclusively which of these outcome patterns was most likely for each variable of interest, we conducted exploratory analyses to determine which patterns were most representative of our data. Our specific study hypotheses and research questions are outlined in the following sections.

Need Fulfillment. Based on the knowledge that even minor episodes of ostracism can be painful, participants' overall basic psychological need fulfillment in both deliberate and unintentional ostracism conditions was predicted to be lower than in control conditions. However, if non-intent was sufficiently obvious, it was possible that

unintentional ostracism might not significantly reduce needs because concluding that it was accidental resolves the threat. It also seemed likely that deliberate ostracism would cause a greater reduction in people's overall needs than unintentional ostracism because those who are deliberately ostracized believe that others actively do not want to involve them in a group activity. We additionally hypothesized that perceived intent may not only lead to differences in overall need fulfillment but also to varying fulfillment in the specific sub-needs of belonging, self-esteem, and meaning in life. Participants' feelings of belonging should arguably be lowest during deliberate ostracism, since their group members clearly prefer to engage with other individuals rather than them. Participants' sense of meaning in life could demonstrate the same pattern, considering that an experience of unintentional ostracism (compared to deliberate ostracism) might be easier to dismiss as an unimportant and fleeting social interaction. Alternatively, however, Nezlek et al. (2012) hypothesized that oblivious ostracism (which occurs when the ostracizer does not notice the victim and therefore lacks awareness of the effects of their behavior) "most directly threatens one's sense of existence and worth" as compared to punitive ostracism (p. 93). Assuming the victims in these accounts of oblivious ostracism truly perceived the ostracizer's behavior as accidental, another possibility for this research was that people who were ostracized intentionally could have reported less meaning in life fulfillment as compared to those ostracized deliberately (Sommer et al., 2001).

Hypothesis I. Compared to the control and unintentional ostracism conditions, we predicted that participants who were excluded deliberately would report greater feelings of exclusion *(Studies 1, 2, & 4).*

Hypothesis II. We predicted that participants experiencing either type of ostracism would report lower overall fulfillment of their basic psychological needs than participants in the control condition *(Studies 3 & 4)*.

Research Question I. How did the participants' *(a)* overall satisfaction of their basic psychological needs, *(b)* satisfaction of belonging needs, and *(c)* satisfaction of meaning in life needs compare between the deliberate and unintentional ostracism conditions? *(Studies 1, 2, & 4)*

Research Question II. *(a)* How did participant affect vary between deliberate and unintentional ostracism conditions? *(Studies 1 & 2) (b)* How did it vary between deliberate ostracism, unintentional ostracism, and control conditions? *(Study 4)*

Behavioral Responses toward the Ostracizers.

Affiliation and Withdrawal. Based on previous research, we speculated that participants might demonstrate the strongest desire to affiliate with their ostracizers after experiencing unintentional ostracism, followed by the control participants, and then deliberately ostracized participants. Williams et al. (2002) found that engagement in Cyberball (measured by the length of time they spent playing the game) increased as participants "went from being overincluded to included to partially ostracized" but those who were fully ostracized were more likely to quit the game sooner (p. 754). The fact that mild ostracism led to peak levels of persistence in the group activity suggested that people may be most motivated to remain engaged as long as both re-inclusion and complete exclusion simultaneously seem like real possibilities. Once exclusion is total, re-inclusion may seem impossible and therefore makes further engagement in the group pointless. Similarly, when the ostracizers' intent behind the exclusion is ambiguous (and

the possibility of future inclusion is therefore more likely), participants could be more inclined to reaffiliate with the group than when the ostracism appears deliberate (Molden et al., 2009). On the other hand, if observed differences between affiliative tendencies in the unintentional ostracism and control conditions remained nonsignificant, it was theorized that the pattern could be explained by the fact that people who participate in an experiment on group activities are probably already highly motivated to affiliate with their assigned group. Regardless, deliberately ostracized participants were predicted to express less desire to affiliate than either of the other conditions. Withdrawal serves a self-protective function in shielding the participant from being further excluded, but it also thwarts the participant's opportunity to restore their sense of belonging by reintegrating themselves in the group. Given that successful reaffiliation may seem less likely after deliberate versus unintentional ostracism, we predicted that the deliberately ostracized would rely most on withdrawal; whereas, the unintentionally ostracized would remain driven to reaffiliate.

Effort. As a highly exploratory research question, we also investigated how the ostracizer's perceived intent to exclude impacted the ostracized person's desire to invest effort in a collaborative group task. We hypothesized that there again existed three equally plausible patterns of potential outcomes. First, deliberately ostracized participants might have reduced their effort in the group game either as a self-protective mechanism or as a strategy to sabotage combined group outcomes. Secondly, all three conditions could have demonstrated equally high demonstrations of effort, though we expected that their desire to achieve would have been driven by different motivations. People in the control condition could have been highly motivated by default to contribute to group

efforts due to the demand characteristics of the situation, whereas those in the deliberate ostracism condition could have been particularly motivated to demonstrate effort as evidence of their own competence and social value, and those in the unintentional ostracism condition may have used effort as another avenue for reaffiliation with the group (Jamieson et al., 2010). Finally, participants in either (or both) ostracism conditions could have demonstrated significantly greater investment in the group game than other conditions if they overcompensated as a means to address their specific threatened needs.

Hypothesis III. Compared to the control and unintentional ostracism conditions, we predicted that participants who were deliberately excluded would report *(a)* less desire to affiliate with group members *(Study 1, 2, 4)* and *(b)* a more negative attitude toward their group members (*Study 4*).

Research Question III. How did control participants compare to unintentionally ostracized participants in their attitude toward their group members? *(Study 3 & 4)*

Research Question IV. How did control participants compare to unintentionally ostracized participants in their desire to affiliate with their group members? *(Study 4)*

Research Question V. How did participants across the control, unintentional ostracism, and deliberate ostracism compare in their effort on a collaborative group task? *(Study 4)*

The Role of Rejection Sensitivity and Loneliness. Individual levels of rejection sensitivity and loneliness were hypothesized to be related to the subjective experience of exclusion. Because it was unknown how these individual-level traits might interact with perceptions of intent, these variables were investigated as highly exploratory research questions.

Research Question VI. What, if any, association exists between individual-level rejection sensitivity and participant outcomes after experiencing either deliberate or unintentional ostracism? (*Study 2 & 4)*

Research Question VII. What, if any, association exists between general loneliness and participant outcomes after experiencing either deliberate or unintentional ostracism? (*Study 2 & 4)*

Study 1: Written Recollection Task

We first wanted to understand how people interpreted and attributed intent in their own life experiences of ostracism. Therefore, in Study 1, we asked people to describe a time in their lives when they felt left out by others and believed the other person either *intended* or *did not intend* to leave them out of the situation. Written recollection tasks can be uniquely beneficial for providing highly detailed, externally valid accounts of people's real-life experiences (Sommer et al., 2001). This type of narrative-based paradigm provides rich contextual information that is difficult to obtain through other paradigms and can provide initial insight into the diversity of social interactions that fall within deliberate and unintentional ostracism experiences. In Study 1, we evaluated the following hypotheses and research questions.

Hypotheses

Hypothesis I

Compared to the unintentional exclusion condition, we predicted that participants who were excluded deliberately would report greater feelings of exclusion.

Hypothesis IIIa

Compared to the unintentional exclusion condition, we predicted that participants who were deliberately excluded would report less desire to affiliate with group members.

Research Questions

Research Question I

How did the participants' *(a)* overall satisfaction of their basic psychological needs, *(b)* satisfaction of belonging needs, and *(c)* satisfaction of meaning in life needs compare between the deliberate and unintentional exclusion conditions?

Research Question IIa

How did participant affect vary between deliberate and unintentional exclusion conditions?

Method

Participants

Participants included 191 undergraduate students recruited from the university's online participant pool (147 female, M_{age} = 19.69, SD_{age} = 3.20). Sixteen additional participants had been excluded from the analysis because they did not follow the study directions. The remaining participant sample was approximately 55% White, 29% Hispanic/Latino, 9% Asian, 6% Black, and 1% American Indian. Participants were compensated for their participation with academic research credit.

Measures

Manipulation Check for Ostracizers' Perceived Intent. To determine the degree to which participants in each condition wrote about unintentional versus deliberate exclusion, participants in both conditions were asked "How much do you believe that the

person or people you described intended to exclude you?" (1 = "not at all"; 5 = "very much").

Affect. Negative affect was measured through five items (e.g., "How much did this experience make you feel bad/sad/angry/upset/jealous?") using a 7-point scale (1 = "not at all"; 7 = "very much"). This scale was previously used to record negative affect after ostracism by Deri and Zitek (2017). Two additional exploratory items ("free"; "autonomous") were included to measure positive affect. We selected principal axis factoring (rather than principal component analysis) to conduct an exploratory factor analysis on the five negative affect items, because it was not assumed that all of the variance in each item would be explained by the extracted factors. The data was deemed suitable for a factor analysis, as Bartlett's test of sphericity indicated that the correlation matrix was significantly different than an identity matrix, and the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) score indicated acceptable sampling adequacy (i.e., the extent to which items share common factors) with a value of .79. The MSA statistics for each individual item were also above the necessary .60 threshold. A single-factor solution explained 47.30% of the variance. All five items demonstrated factor pattern matrix loadings above .40 (see Appendix A for full table); therefore, all items were retained and averaged into a single negative affect score. The scale demonstrated acceptable reliability with a Cronbach's alpha score of .79. Additionally, all inter-item correlations were significant ($p < .001$), with coefficients ranging from .26 to .63.

Feelings of Exclusion. To determine whether recalled experiences varied in the feelings of exclusion they generated, participants were also asked to indicate the extent to which they felt excluded, disconnected, accepted, left out, like an outsider, and like they

belonged in the event they described. Responses were recorded along a 7-point scale (1 = "not at all"; 7 = "very much"). The data was deemed to be suitable for factor analysis, as Bartlett's test was significant, the KMO score was .69, and the MSA statistic for each item was above .60. An exploratory factor analysis using principal axis factoring was then conducted on the six exclusion-related items. A single-factor solution was found to explain 40.80% of the variance. As all items demonstrated factor pattern matrix loadings above .40 (see Appendix A), the items were averaged into a single feelings of exclusion score. The scale demonstrated acceptable reliability with a Cronbach's alpha score of .79. All inter-item correlations were significant ($p < .01$), with coefficients ranging from .22 to .72.

Satisfaction of Basic Need Fulfillment. Participants completed a revised 19-item measure of basic psychological need fulfillment (Jamieson et al., 2010; Williams, 2009b). This measure has typically been analyzed as four subscales: need for belonging ("I felt disconnected"), control ("I felt I had control over my situation"), self-esteem ("I felt good about myself"), and meaning in life ("I felt invisible"). Participants responded to items on a 5-point scale (1 = "not at all"; 5 = "very much"). Negative items were reverse coded so that a higher score on the measure indicated greater fulfillment of the four basic needs. The data was deemed suitable for a factor analysis as Bartlett's test was significant, the KMO value of .89 was meritorious, and the MSA statistic of each item was above .6.

First, a confirmatory factor analysis was conducted to test a model with the four second-order factors (i.e., "belonging," "control," "self-esteem," and "meaning in life) and one second-order factor (i.e., "satisfaction of basic need fulfillment"). Several fit indices were used to assess the overall fit of this hierarchical model. Overall, the model

displayed poor fit (TLI = .74, CFI = .78, RMSEA = .12, RMSEA 90% C. I. = .11 – .13, SRMR = .08). The TLI and CFI values were lower than desired as both should be as close to 1 as possible (in the case of CFI, an ideal value is above .95). The RMSEA and SRMR values were higher than desired, as an ideal value falls below .08. The significant chi-squared analysis also did not indicate a strong model fit ($\chi^2 = 517$, df = 146, $p <$ .001).

Since the confirmatory factor analysis indicated poor fit, we then conducted an exploratory factor analysis. A two-factor solution, identified by retaining factors with an Eigenvalue above 1, achieved a conceptual simple structure (where items showed a high loading on one factor only) and was found to explain a cumulative 44.2% of the variance. After examining the items within each factor, it appeared that the factor analysis had not separated the factors based on thematic differences but rather that participants were responding differently to items based on the valence of their wording. Factor 1 included all but one of the reverse coded items, and Factor 2 included all but one of the remaining items (see Table 2). Therefore, we concluded that the scale represented a single conceptual factor (i.e., satisfaction of basic need fulfillment), which contained both positively worded and negatively worded items. We removed one of the reverse-coded items (which did not show a factor loading of above .40 for either factor) and averaged the remaining items into a single basic need fulfillment score. The single-factor scale demonstrated excellent reliability ($\alpha = .91$). All but two of the inter-item correlations were significant ($p < .05$) and ranged from .11 to .64.

Table 2

EFA Pattern Matrix Loadings for Satisfaction of Basic Need Fulfillment Items

			Factor	
	Hypothesized subscale	Item label	I	II
Item				
I felt invisible (R)	Meaning	M1	**0.81**	-0.17
I felt nonexistent (R)	Meaning	M3	**0.74**	0.03
I felt disconnected (R)	Belonging	B1	**0.72**	-0.05
I felt insecure (R)	Esteem	E4	**0.68**	0.17
I felt meaningless (R)	Meaning	M2	**0.64**	0.12
I felt like an outsider (R)	Belonging	B3	**0.58**	0.09
I felt unable to influence the actions of others (R)	Control	C3	**0.49**	0.03
I felt rejected (R)	Belonging	B2	**0.47**	0.26
I felt good about myself	Esteem	E1	**0.43**	0.28
I felt positive acknowledgement	Belonging	B5	-0.14	**0.78**
I felt liked	Esteem	E5	0.07	**0.72**
I felt satisfied	Esteem	E3	0.04	**0.72**
I felt important	Meaning	M4	0.15	**0.69**
I felt useful	Meaning	M5	-0.01	**0.69**
I felt like I belonged	Belonging	B4	0.01	**0.51**
I felt I had the ability to determine my actions	Control	C2	-0.05	**0.47**
My self-esteem was high	Esteem	E2	0.37	**0.45**
I felt I had control over my situation	Control	C1	0.19	**0.41**
I felt other people decided on the events in my life	Control	C4	0.26	0.13
Factor correlation				
I			7.18 (22.5%)	
II			0.71	1.05 (21.6%)

Note. Boldface indicates factor loadings greater than .40. Factor Eigenvalues and percent of variance explained by the factor are depicted on the diagonal. The correlation between the two factors is shown below the diagonal. Principal axis factoring with direct oblimin rotation was used. All factors with an Eigenvalue above 1 were retained.

Behavioral Responses Post-Exclusion. Participants' behavioral responses after the exclusion event were measured through eight items, created for this project, using a 5-point scale (1 = "not at all"; 5 = "very much"). Scale items included the participants' behaviors toward the ostracizer (e.g., "I made an effort to get to know the person who

excluded me better"; "I minimized my interactions with the person who excluded me") as well as internal responses to processing the exclusion event (e.g., "I thought about the experience after it happened"; "I wanted the person who excluded me to know how the experience made me feel"). An exploratory factor analysis was conducted using principal axis factoring with direct oblimin rotation on the behavioral response items. A two-factor solution (identified using parallel analysis) achieved a conceptual simple structure and was found to explain a cumulative 47.7% of the variance (see Table 3). Although the second factor's eigenvalue was less than 1, it was retained because the two factors appeared to represent different theoretical concepts and adding the second factor to the model increased the cumulative amount of variance explained by ten percent. The first factor subscale was interpreted as representing approach behaviors and demonstrated good reliability ($\alpha = .82$). The approach factor also had significant inter-item correlations ($p < .001$), with coefficients ranging from .30 to .84. The second subscale, interpreted as reflection behaviors, had a questionable Cronbach's alpha reliability score of .64. However, inter-item correlations were still significant ($p < .001$), and coefficients ranged from .24 to .44. The approach subscale was negatively correlated with the reflection subscale.

Table 3

EFA Pattern Matrix Loadings for Behavioral Response Items

	Factor	
	I	II
Item		
I distanced myself from the person who excluded me. (R)	**0.80**	-0.20
I minimized my interactions with the person who excluded me. (R)	**0.78**	-0.13
I interacted with the person who excluded me again after that experience.	**0.76**	0.15
I made an effort to get to know the person who excluded me better.	**0.66**	0.21
If I was around the person who excluded me, I acted as though the previous situation had never happened.	**0.48**	-0.01
I told someone else about my experience feeling excluded.	-0.03	**0.79**
I thought about the experience after it happened.	-0.13	**0.48**
I wanted the person who excluded me to know how the experience made me feel.	-0.07	**0.46**
Factor correlation		
I	2.99 (32.10%)	
II	-0.59	0.55 (15.60%)

Note. Boldface indicates factor loadings > .40. Factor Eigenvalues and percent of variance explained by the factor are depicted on the diagonal. The correlation between the two factors is shown below the diagonal. All indices (Bartlett's test, KMO, MSA statistics) indicated that this data was factorable. The overall KMO value was .79. Principal axis factoring with direct oblimin rotation was used.

Procedure

Participants completed an online survey that began with a written recollection task. Qualtrics randomly assigned participants to receive one of two writing prompts. Participants were prompted to recall either *(1)* a time they felt left out by others and they believed the person or people *intended* to leave them out of the situation (deliberate exclusion condition), or *(2)* a time when they believed the person or people *did not intend* to leave them out (unintentional exclusion condition). Examples of the types of situations participants might describe were provided for both the deliberate condition (e.g., "Perhaps your close friend chooses someone other than you to work with on a class project") and the unintentional condition (e.g., "Maybe you see a photo online of people

you know hanging out, but your friend forgot to tell you about the event"). Participants were instructed to describe in as much detail as possible who was involved in the situation, what happened, how it made them feel, and how it affected their relationship with the person afterwards. After the written recollection task, participants completed the perceived intent manipulation check (1 item), affect items (7 items), feelings of exclusion scale (8 items), satisfaction of basic need fulfillment scale (19 items), behavioral response scale (8 items), and demographic questions (3 items).

Quantitative Results of Study 1

Overview of Data Analysis

For all studies in this paper, factor analyses and reliability analyses were conducted in the open-source program jamovi (The jamovi project, 2021). All remaining analyses were conducted using the open-source program JASP (JASP Team, 2020). Parametric tests were used in-text for all dependent variables, but nonparametric tests were additionally conducted for any ordinal-scale single items (see Appendix F for nonparametric results). Unless otherwise noted in-text, results of the nonparametric tests did not differ from the results of the parametric analyses. In cases during parametric analysis when Levene's test indicated that the homogeneity of variances between two or more groups could not be assumed, a corrected *Welch's t* or *Welch's F* statistic (and corresponding Games-Howell post-hoc tests, when applicable) was reported in lieu of the standard *F* or *t* values. See Appendix G for details on how effect sizes were calculated and interpreted for all analyses.

Reported data analyses included outliers, unless otherwise noted. Extreme outliers within each study condition were identified using box and whisker plots. To identify

outliers, box and whisker plots multiply the length of the interquartile range (i.e., the "box") by 1.5; any data point falling beyond that distance (as measured from either end of the box) is defined as an extreme outlier. Across all of our datasets, outliers reflected extreme values selected by participants and therefore could have resulted from either *(a)* participant inattention (e.g., answering at random, misreading the question), or *(b)* natural deviations in participant responses where some participants simply had more extreme experiences. As we had no way to determine whether our study outliers were better explained by participant errors or natural deviations, we chose to conduct additional analyses with extreme outliers removed for all dependent variables, in order to compare results without outliers to analyses of the full data set. However, these alternative results were only reported in cases where removing outliers made non-significant comparisons statistically significant. There were no cases where removing outliers made statistically significant comparisons non-significant.

Post-hoc Sensitivity Analysis

A post-hoc sensitivity analysis was conducted using the *G*Power* program with alpha (α) set to 0.05 and power (1 – β) set to .80 for a two-tailed test. This analysis indicated that with the given sample size of 191 participants, the minimum detectable effect size (MDES) that an independent samples t-test could identify was a Cohen's *d* of 0.41. A second post-hoc sensitivity analysis (using the previously stated settings) indicated that the minimum detectable effect size for a Chi-Squared test was a Cohen's *w* of 0.20. In a 2 by 2 contingency table, Cohen's *w* and Cramer's *V* reflect identical values; Cohen's *w* can alternatively be computed by dividing the chi-squared value by the total

number of participants and then calculating the square root of that value (see Appendix G).

Manipulation Check for Ostracizers' Perceived Intent (5-pt scale)

Participants assigned to write about an experience of deliberate exclusion reported that the people in the event they described intended to exclude them significantly more (n = 74, M = 3.87, SD = 1.23) than the participants who wrote about an unintentional exclusion experience (n = 81, M = 2.15, SD = 1.15), $t(153) = 8.97$, $p < .001$, $d = 1.44$ (large effect, exceeds MDES). Due to an administrative error, 36 participants were not shown this item and were not included in this analysis.

Negative Affect and Feelings of Exclusion (7-pt scales)

Deliberately excluded participants reported feeling more negative affect (n = 94, M = 4.85, SD = 1.46) than unintentionally excluded participants (n = 97, M = 4.36 SD = 1.37), $t(189) = 2.37$, $p = .019$, $d = 0.34$ (small effect). Deliberately excluded participants also reported feeling more excluded (M = 5.82, SD = 0.98) than unintentionally excluded participants (M = 5.28, SD = 1.15), $t(189) = 3.48$, $p < .001$, $d = 0.50$ (large effect, exceeds MDES). No significant condition differences were found for the two exploratory positive affect items of feeling free [$t(189) = -1.13$, $p = .25$, $d = -0.16$] or feeling autonomous, *Welch's* $t(167.89) = -0.50$, $p = .62$, $d = -0.07$.

Satisfaction of Basic Need Fulfillment (5-pt scale)

Participants who were deliberately excluded showed less overall basic psychological need fulfillment (M = 2.14, SD = 0.71), than participants who were unintentionally excluded (M = 2.36, SD = 0.68), $t(189) = -2.16$, $p = .032$, $d = -0.31$ (small effect).

Behavioral Responses Post-Exclusion (5-pt scale)

Group differences in participants' approach behaviors and their reflection behaviors were analyzed using a MANOVA**.** As the reflection behavior subscale was identified during the exploratory factor analysis rather than deliberately constructed, analyses on this subscale were considered to be exploratory. Results showed a statistically significant difference between conditions in participants' overall behavioral responses post-exclusion, $F(2, 188) = 8.59$, $p < .001$; Wilk's $\Lambda = 0.92$ $\eta^2 = .08$ (medium effect)[1]. Follow-up t-tests showed that unintentionally excluded participants reported stronger approach behaviors toward their ostracizer ($M = 3.51$, $SD = 1.00$) than deliberately excluded participants ($M = 2.91$, $SD = 1.05$), $t(189) = -4.07$, $p < .001$, $d = -0.59$ (medium effect, exceeds MDES). Unintentionally excluded participants also reported less reflection-related behavior post-exclusion ($M = 3.14$, $SD = 1.11$) than deliberately excluded participants ($M = 3.51$, $SD = 1.02$), $t(189) = 2.39$, $p = .018$, $d = 0.35$ (small effect).

Qualitative Results of Study 1

Interrater Reliability

A deductively driven coding method was used to analyze the 191 qualitative narratives written by the participants. Two coders who were blind to condition independently coded the narratives to identify the type of exclusion described, the duration of the exclusion, the participants' feelings of exclusion and negative affect, and the participants behavioral responses following the exclusion (e.g., affiliation, withdrawal, communication). The coders reviewed the responses in sets of 50 and met to discuss and resolve coding conflicts after every set. Cohen's Kappa was calculated for

each variable, and values indicated moderate to strong levels of agreement for most variables. The percentage of interrater agreement was also calculated and reflected the original interrater agreement prior to any discussion of conflicts (see Table 4). Interrater agreement was calculated by dividing the number of times the coders agreed that either a code was present or absent by the total number of participants. Every identified conflict was addressed through discussion and a code was then agreed upon collaboratively so that 100% interrater agreement was ultimately achieved. Once all coding conflicts were resolved, code frequencies were analyzed using descriptive and inferential statistics.

Table 4

Qualitative Codebook and Interrater Agreement

Theme	Codes	Guiding definition and example	Interrater agreement (n = 191)	Cohen's Kappa
Type of exclusion	Left out of activity	Others share a social experience or make social plans that do not include the narrator *"There was a girl who was having a pool party and didn't want to invite me"*	90%	.77 *Moderate*
	Ignored	Others fail to respond to the narrator's texts, verbal comments, or physical presence *"I realized he wasn't paying attention to my story because he was playing video games"*	93%	.80 *Strong*
	Information exclusion	Others share common knowledge or previous experiences that the narrator does not share *"They had lots of inside jokes and would laugh together at the funny things that happened on the [lacrosse] team… I always felt left out"*	95%	.75 *Moderate*
	Left physically alone	Narrator is affected by a physical barrier or physical distance, *or* narrator is left physically alone by others *"We were all eating at a round table and everyone was talking to each other except me because I was too far [from] the conversation"*	94%	.53 *Weak*

	Insulted	Narrator is told directly that they are not wanted or that they possess an undesirable characteristic / quality *"She would make fun of the food I would bring to lunch"*	97%	.75 *Moderate*
Duration of exclusion	Single event	Narrator does not reference feeling excluded in similar situations at other points in time	89%	.78 *Moderate*
	Frequent event	Narrator makes reference to being excluded similarly on other occasions *"I see lots of times my friends go out and I am not invited"*	89%	.78 *Moderate*
Negative affect	Angry, sad, upset, hurt	Narrator directly uses a code word to describe their feelings *"I was mad at first but then I just felt sad"*	91%	.82 *Strong*
Feelings of exclusion	Disconnected, unwanted, unimportant	Narrator directly uses a code word to describe their feelings, or it can be inferred from their description that they are experiencing a similar emotion *"This makes me feel very unwanted that I am only a second option to my oldest sister"*	81%	.62 *Weak*
Affiliative behavior	Invested in relationship more, still friends afterwards, or reaffiliated later	Narrator's relationship is unaffected or positively affected by event *"It doesn't affect my relationship with them, it just makes me want to make more time to go out with them"*	81%	.40 *Weak*
Withdrawal behavior	Grew apart, invested in relationship less, ended relationship, avoided ostracizer	Narrator's relationship with ostracizer is negatively affected by event *"I realized that she isn't really my best friend and I stopped talking to her"*	95%	.89 *Strong*
Communic-ative behavior	Shared feelings with ostracizer or asked them why they were excluded	Narrator communicates with ostracizer about the experience of exclusion *"When I asked them why they didn't invite me, they said they thought I wouldn't have wanted to come"*	94%	.66 *Moderate*

Note. Duration of exclusion was the only theme with mutually exclusive codes.

Overall Theme Frequency

The majority of exclusion events described in the narratives involved being left out of a social activity (69%), followed by experiences of being socially ignored (27%). A single exclusion narrative often described several types of exclusion occurring

simultaneously; for example, a person might describe finding out they were left out of an activity and then having their text ignored after they messaged their friends to ask about the event. Overall responses were evenly split in whether they described an isolated social exclusion incident (54%) or an experience that seemed to occur repeatedly with the same individuals (46%). Table 5 provides a summary of overall theme frequency.

Table 5

Overall Frequency in the Type and Duration of Exclusion Described

Theme	Codes	Number of narratives (n = 191)	Percentage of narratives
Type of exclusion	Left out of activity	132	69.11%
	Ignored	51	26.70%
	Information exclusion	23	12.04%
	Left physically alone	16	8.38%
	Insult	13	6.81%
Duration of exclusion	Single event	103	53.93%
	Frequent event	88	46.10%

Theme Frequency by Condition

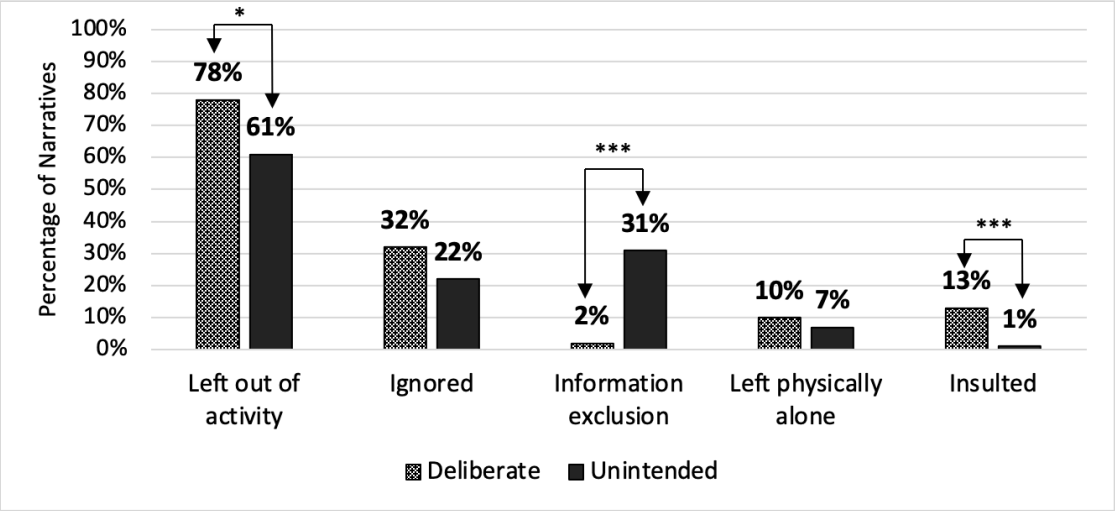
A series of chi-square tests was conducted to compare the frequency of themes identified between the deliberate and unintentional exclusion conditions (see Figure 1, Figure 2, and Table 6). In addition to significance values, we reported Cramer's V as an indication of the strength of association between each set of variables, with a value of .10 considered the minimum threshold for a relationship. Participants in the deliberate exclusion condition were more likely than participants in the unintentional exclusion condition to write about being left out of an activity, χ^2 (1, N = 191) = 6.34, p = .012, Cramer's V = 0.18 (small effect), or being insulted, χ^2 (1, N = 191) = 10.36, p = .001, Cramer's V = 0.23 (small effect, exceed MDES). On the other hand, participants reflecting on unintentional exclusion were more likely than those in the deliberate

condition to mention experiencing information exclusion, χ^2 (1, N = 191) = 17.18, p < .001, Cramer's V = 0.30 (medium effect, exceeds MDES). There were no condition differences in how often participants wrote about being ignored [χ^2 (1, N = 191) = 2.57, p = .11, Cramer's V = 0.12] or left physically alone, χ^2 (1, N = 191) = 0.35, p = .56, Cramer's V = 0.04. There were also no condition differences in how often participants wrote about experiencing exclusion that was a single event versus a frequent event.

There was a significant relationship between the participants' condition and the mention of negative affect in their narrative, χ^2 (1, N = 191) = 7.26, p = .007, Cramer's V = 0.20 (small effect, meets MDES). Participants writing about deliberate exclusion were more likely to mention negative affect (i.e., feeling angry, sad, upset, or hurt) than those writing about unintentional exclusion. Participants writing about unintentional exclusion, however, were more likely to mention feeling excluded (defined as feeling disconnected, unwanted, or unimportant) than those writing about deliberate exclusion, χ^2 (1, N = 191) = 13.67, p < .001, Cramer's V = 0.27 (small effect, exceeds MDES). There were no significant condition differences in the narratives' mention of affiliative, withdrawal, or communicative behaviors.

Figure 1

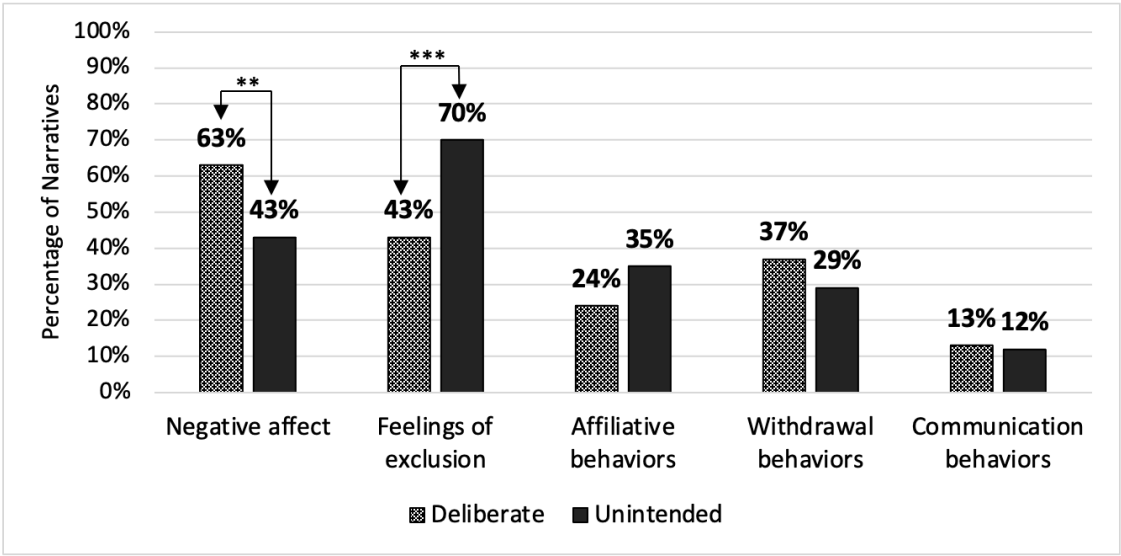
Type of Exclusion Described in Deliberate and Unintentional Exclusion Narratives



Note. $p < .05$*; $p < .01$**; $p < .001$***

Figure 2

Emotional and Behavioral Responses to Exclusion Described in Narratives



Note. $p < .05$*; $p < .01$**; $p < .001$***

Table 6

Comparing Theme Frequency Between Deliberate and Unintentional Exclusion Narratives

Theme		Frequency	Unintentional exclusion (n = 97)	Deliberate exclusion (n = 94)	Significance	Cramer's V
Type of exclusion	Left out of activity	Count	59	73	p = .012*	.18†
		(Expected Count)	*(67.04)*	*(64.96)*		
	Ignored	Count	21	30	p = .11	.12†
		(Expected Count)	*(25.90)*	*(25.10)*		
	Information exclusion	Count	21	2	P < .001***	.30†
		(Expected Count)	*(11.68)*	*(11.32)*		
	Left physically alone	Count	7	9	p = .56	.04
		(Expected Count)	*(8.13)*	*(7.87)*		
	Insult	Count	1	12	p = .001**	.23†
		(Expected Count)	*(6.60)*	*(6.40)*		
Duration of exclusion	Single event	Count	51	53	p = .60	.04
		(Expected Count)	*(52.82)*	*(51.18)*		
	Frequent event	Count	46	42	p = .70	.03
		(Expected Count)	*(44.69)*	*(43.31)*		
Affect	Negative affect	Count	42	59	p = .007**	.20†
		(Expected Count)	*(51.29)*	*(49.71)*		
	Feelings of exclusion	Count	68	41	p < .001***	.27†
		(Expected Count)	*(55.36)*	*(53.64)*		
Behaviors	Affiliation	Count	34	23	p = .11	.12†
		(Expected Count)	*(28.95)*	*(28.05)*		
	Withdrawal	Count	28	35	p = .22	.09
		(Expected Count)	*(32.00)*	*(31.01))*		
	Communica-tion	Count	12	12	p = .93	.01
		(Expected Count)	*(12.19)*	*(11.81)*		

p < .05*, p < .01**, p < .001**, small Cramer's V effect size†

Discussion of Study 1

Study 1 findings indicated that, overall, deliberate exclusion had a greater psychological impact on people than unintentional exclusion. Confirming *Hypothesis I*, deliberately ostracized participants felt more excluded than those who were unintentionally ostracized. Participants also felt less fulfilled in their basic psychological needs (*RQ I*), reported greater negative affect (*RQ II*), and reflected more on the

experience when they believed they had been excluded by others deliberately. Though greater reflection on the experience (e.g., thinking about it after it happened) was not included as a variable in our initial hypotheses, it may indicate that deliberate exclusion was a more psychologically impactful event that required greater cognitive processing prior to participants being able to move past the event. Notably, deliberate exclusion also led to greater relational consequences, as people were less likely to socially engage with their ostracizer afterwards when they believed they had been left out on purpose. These findings were interpreted in support of *Hypothesis IIIa*, which predicted that those who were deliberately excluded would show less desire to affiliate with their ostracizers than those unintentionally excluded. We were unable to evaluate how participants varied in their specific satisfaction of their belonging or meaning in life needs *(RQ I)*, as the presence of these subscales were not supported by the factor analyses.

Qualitative analyses of participants' exclusion narratives supported the finding that deliberately excluded people were more likely to mention feeling angry, sad, upset, or hurt, but surprisingly found that feelings of exclusion (i.e., feeling disconnected, unwanted, unimportant) were more likely to be mentioned in descriptions of unintentional exclusion events. One possible explanation for this finding is that deliberately excluded individuals may be better able to categorize and label their feelings into concrete emotions such as anger or sadness, whereas those unintentionally excluded may be left with a more general feeling of disconnection. If this is the case, experiences of unintentional exclusion could, over time, potentially generate a greater sense of meaninglessness or insignificance, as deliberate exclusion at least suggests some acknowledgement of the person being excluded and may facilitate cognitive processing

of the event. However, given that the interrater reliability was weak for the qualitative coding of exclusion feelings, these potential relationships should be considered speculative and require further exploration through more diverse methods.

Additional exploratory analysis of the written narratives demonstrated that people commonly experience a range of different exclusion experiences in their daily lives, including being left out of social activities, being ignored, being excluded from shared information, being left physically alone, and/or being insulted. Although participants overall mentioned being left out of activities as the most common type of social exclusion (mentioned in 67% of the narratives), the type of exclusion experiences people recalled varied by condition. People instructed to recall experiences of deliberate exclusion were more likely to write about being left out of an activity or being insulted; whereas people who recalled experiences of unintentional exclusion more frequently wrote about instances of information exclusion. Regardless of condition, people were equally likely to write about being ignored or left physically alone. This finding suggests that the type of exclusion experience may be closely intertwined with perceptions of intent, although the exact relationship between the two remains unclear. For example, does the type of exclusion itself shape people's interpretation of intent? Perhaps experiences of information exclusion in general are easier to dismiss as unintentional, whereas insults may afford less ambiguity in the ostracizer's intent. If true, ostracizers may also potentially choose to exclude others through more ambiguous methods in order to reduce their personal accountability while still achieving their desired goal. Further research is needed to explore the potential relationship between the type of exclusion event and people's interpretation of intent, as well as its related implications.

Limitations and Next Steps

In Study 1, the participant sample was limited to undergraduate students who may not have experienced exclusion events as diverse as what people experience as they grow older. The post-hoc sensitivity analyses indicated that our sample size was sufficient to detect the significant effect sizes we observed when comparing participants' quantitative reports of approach behaviors and feelings of exclusion between conditions. However, caution should be used when interpreting the significant effects of exclusion type on participants' negative affect, level of basic psychological need fulfillment, and reflection behaviors post-exclusion, as the design was underpowered to detect effects of this magnitude. Similarly, our sample size was considered large enough to detect the significant condition differences we observed in how frequently participants mentioned being insulted, experiencing information exclusion, feeling negative affect, and feeling excluded in their qualitative narratives; however, our Chi-Squared tests were underpowered in detecting the significant condition differences we observed in how frequently narratives mentioned being left out of an activity. In the next study, we tested whether the current findings generalized to a larger sample size of participants that represented a broader age range. Additionally, in our coding of the written narratives, we identified several new, relevant variables that we had not previously included in our hypotheses or quantitative exploration. These variables included the victim's allocation of blame for the exclusion event, experiences of negative affect beyond what we previously included (e.g., uncertainty, betrayal, loss of confidence), the perceived negativity of the event, the short-term versus long-term emotional impact of the event,

and additional items that we theorized might better represent approach or reflection behaviors. We included these variables for exploratory analysis in Study 2.

Study 2: Written Recollection Task Replication

In Study 2, we replicated the investigation from Study 1 using an Amazon Mechanical Turk (MTurk) sample. Based on insights from the qualitative analysis of participants' exclusion narratives in Study 1, we expanded the exploratory dependent variables we assessed and also included new measures to assess the effect of participants' rejection sensitivity and general loneliness on reactions to social exclusion. In Study 2, we tested the following hypotheses and research questions.

Hypotheses

Hypothesis I

Compared to the unintentional exclusion condition, we predicted that participants who were excluded deliberately would report greater feelings of exclusion.

Hypothesis IIIa

Compared to the unintentional exclusion condition, we predicted that participants who were deliberately excluded would report less desire to affiliate with group members.

Research Questions

Research Question I

How did the participants' *(a)* overall satisfaction of their basic psychological needs, *(b)* satisfaction of belonging needs, and *(c)* satisfaction of meaning in life needs compare between the deliberate and unintentional exclusion conditions?

Research Question IIa

How did participant affect vary between deliberate and unintentional exclusion conditions?

Research Question VI

What, if any, association exists between individual-level rejection sensitivity and participant outcomes after experiencing either deliberate or unintentional exclusion?

Research Question VII

What, if any, association exists between general loneliness and participant outcomes after experiencing either deliberate or unintentional exclusion?

Method

Participants

Two hundred and ninety-seven MTurk workers were recruited online. Recruitment was Recruitment was limited to workers located in the United States, and only workers with a 90% HIT approval rating above were eligible for the study. Forty-eight participants were removed from the data set because they failed the attention check question or did not follow the study directions, resulting in a total sample size of 249 MTurk workers (146 male, M_{age} = 36.63, SD_{age} = 10.52). The participant sample was approximately 74% White, 11% Black, 9% Asian, 6% Hispanic/Latino, and less than 1% American Indian. Participants were paid $2 for participating and spent an average of 15 minutes completing the study. Almost all participants (97%) completed the study materials on their laptop.

Measures

Rejection Sensitivity. Six items were used to measure participants' overall sensitivity to social rejection (Ronen & Baldwin, 2010). Participants indicated how much they agreed with statements like "If anyone doesn't seem to like me, I think about it for the rest of the day" (-3 = strongly disagree; +3 = strongly agree). Previously, the scale demonstrated acceptable test-retest reliability with a coefficient of .75 and had a Cronbach's alpha coefficient between .75 and .84. The data was deemed to be factorable, and our exploratory factor analysis (using principal axis factoring) indicated that these six items continued to load above .40 on a single factor that explained 72.40% of the data's variance. Items were therefore averaged into a mean rejection sensitivity score for analysis (see Appendix B for details). When analyzed for this study, the scale demonstrated excellent reliability with a Cronbach's alpha score of 0.94. All inter-item correlations were significant ($p < .001$), with coefficients ranging from .61 to .86.

Loneliness. A 3-item scale was adapted from previous research to measure participants' overall loneliness (Hughes, Waite, Hawkley, & Cacioppo, 2004). Participants were asked, in general, how often they felt left out, isolated, and felt they lacked companionship (1 = "never"; 5 = "very often"). Previously, this scale demonstrated acceptable reliability ($\alpha = .72$) and good discriminant validity (e.g., higher loneliness scores were associated with higher depression and stress scores). Our exploratory factor analysis (using principal axis factoring) indicated that these three items continued to load on a single factor that explained 83.80% of the variance, so items were averaged into a mean loneliness score for analysis (see Appendix B). When analyzed for this study, the scale demonstrated excellent reliability with a Cronbach's alpha score of

0.94. All inter-item correlations were significant ($p < .001$), with coefficients ranging from .83 to .85.

Manipulation Check for Ostracizers' Perceived Intent. As in Study 1, participants in both conditions were asked, "How much do you believe that the person or people you described intended to exclude you?" (1 = "not at all"; 5 = "very much").

Event Valence. To assess the perceived valence of the exclusion event participants described, participants were asked, "Thinking back on this event, how positive or negative was the experience you described?" (-3 = "very negative"; +3 = "very positive").

Emotional Impact. Participants were asked two questions to determine the emotional impact of the exclusion event they described: "How much did this experience emotionally impact you in the moment?" and "How much did this experience impact you over time?" (1 = "not at all"; 7 = "extremely").

Negative Affect. Negative affect was measured through the same five items as Study 1 (e.g., "How much did this experience make you feel bad/sad/angry/upset/jealous?"), as well as five additional items ("confused/uncertain/distrustful/betrayed/less confident"). Items were measured on a 7-point scale (1 = "not at all"; 7 = "very much"). An exploratory factor analysis (using principal axis factoring) indicated that these 10 items continued to load above .40 on a single factor that explained 54.20% of the total variance. Items were therefore averaged into a mean negative affect score for analysis (see Appendix B for details). The scale demonstrated excellent reliability with a Cronbach's alpha score of 0.92, and all inter-item correlations were significant ($p < .001$), with coefficients ranging from .27 to .77.

Feelings of Exclusion. The same six items in Study 1 were used again in Study 2 to determine whether recalled experiences varied in the degree of exclusion they involved. A second exploratory factor analysis continued to indicate that the items loaded onto a single factor that explained 52.50% of the variance, so the items were factored together into an average score for analysis (see Appendix B). The scale again demonstrated good reliability with a Cronbach's alpha score of .86. All inter-item correlations were significant ($p < .01$), with coefficients ranging from .18 to .87.

Perceived Blame. To explore how participants allocated blame for the exclusion event they described, they responded to three items: "Thinking back on this experience, to what extent do you believe you were to blame for what happened/other people were to blame for what happened/no one was to blame for what happened?" (1 = "not at all"; 7 = "completely").

Satisfaction of Basic Need Fulfillment. Participants completed a 20-item measure of basic psychological need fulfillment (identical to Study 1, with the exception of one added item). A second exploratory factor analysis indicated that, similar to Study 1 analysis, items were loading on to two factors that were separated based on the valence of the question wording (see Appendix B for factor loadings). The exceptions were two positively worded items (one which had a factor loading of .37) which loaded onto the negative-valence factor. All remaining items demonstrated factor loadings above .40. The two-factor solution cumulatively explained 56.4% of the variance. Given that the two-factor structure did not separate items based on conceptually distinct constructs, we retained all items and averaged them into a single need fulfillment score for analysis, as we did in Study 1. This single-factor scale again demonstrated excellent reliability (α =

0.93), and all but ten of the inter-item correlations between each of the 20 items were statistically significant.

Behavioral Responses Post-Exclusion. Participants' behavioral responses after the exclusion event were measured through the same seven items used in Study 1, plus 14 additional items. The additional items were based on behaviors identified in participants' written narratives from Study 1. Six of the total 21 items included a "does not apply" answer option, as these statements would not have been relevant for situations where the person did not have a pre-existing relationship with the ostracizer or never saw the ostracizer again after the exclusion event. These items therefore varied in their number of responses (see Table 7).

An exploratory factor analysis (using principal axis factoring) was conducted for a second time. Two factors (with Eigenvalues above 1) were retained and explained a cumulative 48% of the variance. Out of the total 21 items, two items were dropped from the analysis because they failed to load above .40 on either factor. Two additional items loaded above .40 on both factors and were averaged as part of the first factor rather than the second because they appeared to be more conceptually related to the other items. Though the first factor in Study 2 contained some of the same items as the approach factor from Study 1, this factor was more strongly defined by items describing negative rather than positive relational outcomes and was therefore interpreted as representing relational conflict and withdrawal behaviors. The relational conflict subscale (15 items) demonstrated excellent reliability ($\alpha = .92$). As in Study 1, the second factor (4 items) was again interpreted as reflection behaviors and demonstrated improved reliability ($\alpha = .78$).

Table 7

Second EFA Pattern Matrix Loadings for Behavioral Reaction Items

		Factor	
	N	I	II
Item			
The experience negatively affected my relationship with the person.	233	**0.90**	-0.00
After the experience, I wanted to see the person who excluded me less frequently.	249	**0.87**	-0.03
After the experience, I wanted to end my relationship with the person.	232	**0.83**	-0.01
My relationship with the person was tense after the experience.	228	**0.80**	0.12
The experience led to conflict in my relationship with the person.	230	**0.74**	0.17
I wanted to interact with the person again after that experience. (R)	249	**0.74**	-0.35
I minimized my interactions with the person who excluded me.	249	**0.73**	-0.09
I didn't hold the experience against the person who had excluded me. (R)	249	**0.73**	-0.13
I wanted the person who excluded me to feel the same negative emotions I had felt.	249	**0.67**	0.28
I wanted to make the person who excluded me feel bad for how they had made me feel.	249	**0.64**	0.30
I wanted to get back at the person who excluded me.	249	**0.52**	0.28
If I was around the person who excluded me, I acted as though the previous situation had never happened. (R)	229	**0.45**	0.10
I thought about the experience of being excluded after it happened.	249	**0.41**	0.27
I wanted to invest more in my relationship with the person who excluded me. (R)	249	**0.49**	**-0.50**
I made an effort to get to know the person who excluded me better. (R)	228	**0.42**	**-0.50**
I wanted the person who excluded me to know how the experience made me feel.	249	0.16	**0.75**
I shared my feelings about the experience with the person who excluded me.	249	-0.09	**0.70**
I wanted to talk through the experience with someone after it happened.	249	0.24	**0.65**
I needed to process the experience after it happened.	249	0.34	**0.43**
I kept my feelings about the experience to myself after it happened. (R)	249	0.09	0.29
I tried to put the experience out of mind after it happened.	249	-0.16	0.18
Factor correlation			
I		7.35 (34.50%)	
II		0.13	2.35 (13.5%)

Note. Boldface indicates factor loadings > .40. Factor Eigenvalues and percent of variance explained by the factor are depicted on the diagonal. The correlation between the two factors is shown below the diagonal.

All indices (Bartlett's test, KMO, MSA statistics) indicated that this data was factorable. The overall KMO value was .89. Principal axis factoring with direct oblimin rotation was used. All factors with an Eigenvalue above 1 were retained.

Procedure

Participants completed an online survey that began with the rejection sensitivity and loneliness scales. They then moved on to the same written recollection task as Study 1, with the same two conditions (deliberate exclusion prompt vs. unintentional exclusion prompt). After the written recollection task, participants completed the perceived intent manipulation check (1 item), event valence item (1 item), emotional impact items (2 items), the negative affect scale (10 items), feelings of exclusion scale (6 items), blame items (3 items), satisfaction of basic need fulfillment scale (20 items), behavioral response scale (21 items), and demographic questions (4 items). Participants also completed an attention check item that asked them to report which exclusion prompt they had been assigned for the writing exercise.

Results of Study 2

Post-Hoc Sensitivity Analysis

A post-hoc sensitivity analysis was conducted in the *G*Power* program with alpha (α) set to 0.05 and power (1 – β) set to .95 for a two-tailed test. This analysis indicated that with the given sample size of 249 participants, the minimum detectable effect size (MDES) that an independent samples t-test would be able to identify was a Cohen's *d* of 0.46. When power was reduced to .80 for the same sensitivity analysis, the MDES for Cohen's *d* was 0.36.

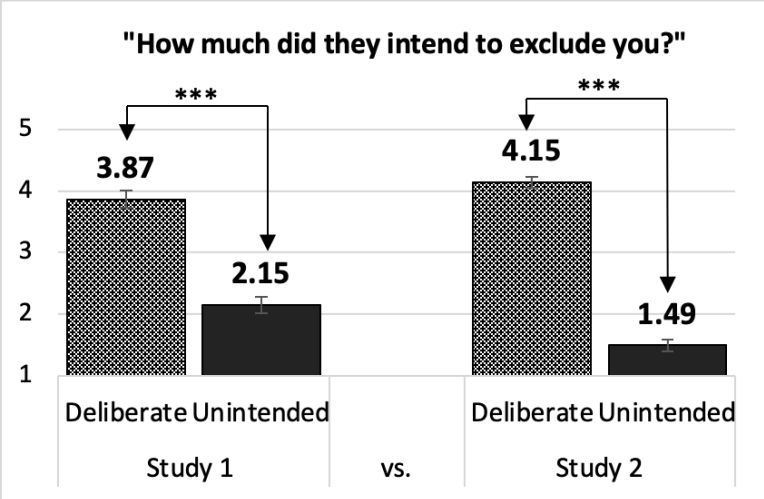
Manipulation Check for Ostracizers' Perceived Intent (5-pt scale)

Participants assigned to write about an experience of deliberate exclusion reported that the people they described intended to exclude them significantly more (n = 129, M =

4.15, *SD* = 1.03) than participants who wrote about an unintentional exclusion experience (*n* = 120, *M* = 1.49. *SD* = 0.96), *t*(247) = 20.97, *p* < .001, *d* = 2.66 (large effect, exceeds MDES). For a comparison of self-reported perceived intent across both Study 1 and Study 2, see Figure 3.

Figure 3

Condition Differences in the Ostracizer's Perceived Intent to Exclude



Note. *p* < .05*; *p* < .01**; *p* < .001***

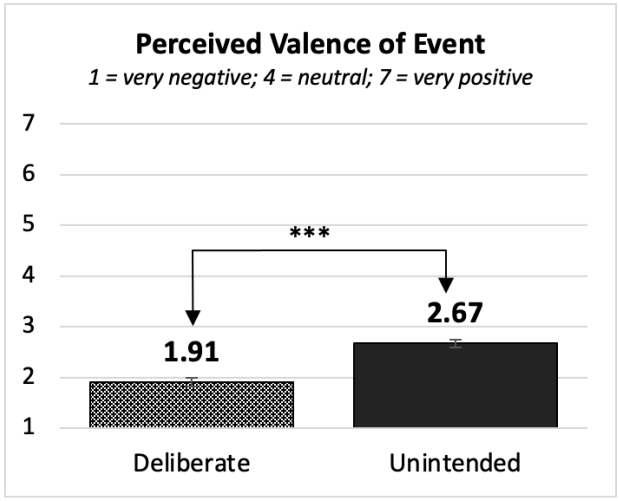
Valence and Emotional Impact of Event (7-pt scale)

Participants described deliberate exclusion events as significantly more negative (*M* = 1.91, *SD* = 0.87) than unintentional exclusion events (*M* = 2.67, *SD* = 0.88), *t*(247) = -6.84, *p* < .001, *d* = -0.87 (large effect, exceeds MDES). Participants reported that deliberate exclusion events (*M* = 4.82, *SD* = 1.68) impacted them emotionally in the moment more than unintentional exclusion events (*M* = 4.33, *SD* = 1.63), *t*(247) = 2.37, *p* = .019, *d* = .30 (small effect). Deliberate exclusion events (*M* = 3.79, *SD* = 1.77) were also more emotionally impactful over time than unintentional exclusion events (*M* = 2.82, *SD* = 1.43), *Welch's t*(242.27) = 4.80, *p* < .001, *d* = 0.61 (medium effect, exceeds

MDES). See Figures 4 and 5 for a visual representation of the observed condition differences.

Figure 4

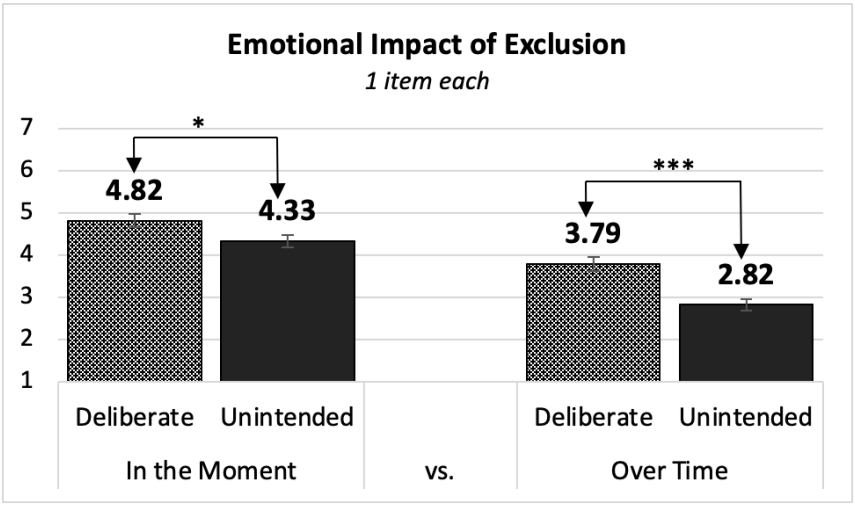
Condition Differences in the Perceived Valence of the Exclusion Event



Note. $p < .05$*; $p < .01$**; $p < .001$***

Figure 5

Condition Differences in the Perceived Emotional Impact of the Exclusion Event



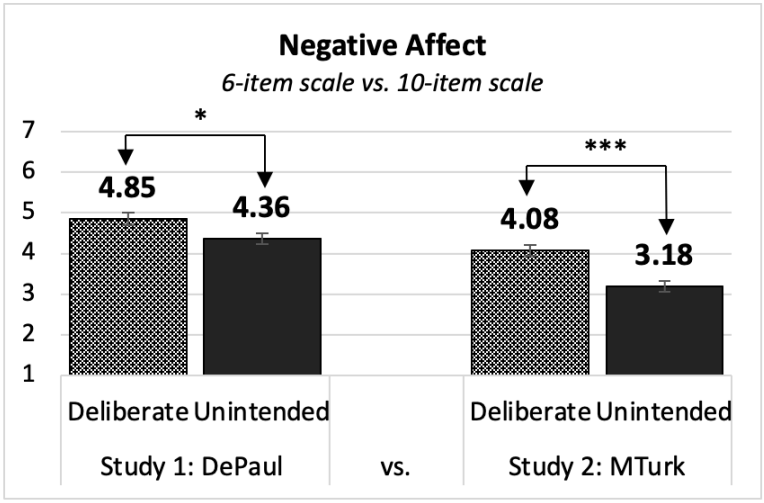
Note. $p < .05$*; $p < .01$**; $p < .001$***

Negative Affect and Feelings of Exclusion (7-pt scales)

Deliberately excluded participants reported feeling more negative affect (M = 4.08, SD = 1.47) than unintentionally excluded participants (M = 3.18, SD = 1.38), $t(247) = 4.97$, $p < .001$, $d = 0.63$ (medium effect, exceeds MDES). Deliberately excluded participants also reported feeling more excluded (M = 5.86, SD = 1.00) than unintentionally excluded participants (M = 5.17, SD = 1.27), $t(225.92) = 4.74$, $p < .001$, $d = 0.60$ (medium effect, exceeds MDES). Figures 6 and 7 show a comparison of the means observed for these variables across both Study 1 and Study 2.

Figure 6

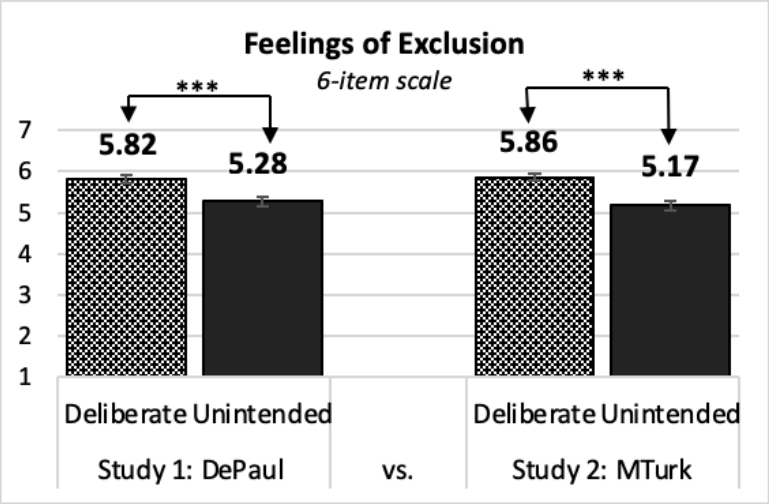
Condition Differences in Self-Reported Negative Affect After Exclusion



Note. $p < .05$*; $p < .01$**; $p < .001$***

Figure 7

Condition Differences in Self-Reported Feelings of Exclusion



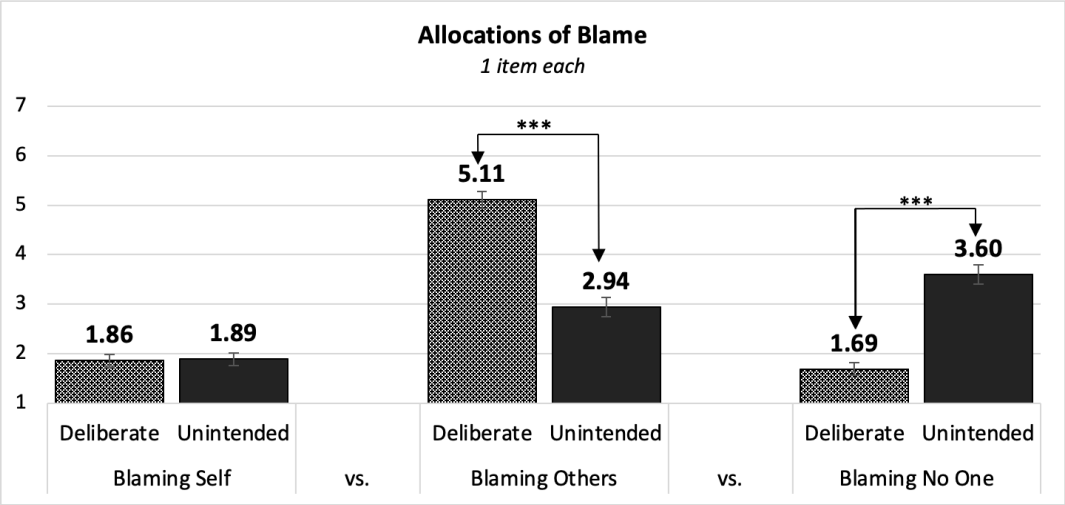
Note. $p < .05$*; $p < .01$**; $p < .001$***

Allocations of Blame (7-pt scale)

There were no differences between how much the participant blamed themselves for the exclusion in the deliberate ($M = 1.86$, $SD = 1.46$) versus unintentional exclusion ($M = 1.89$, $SD = 1.45$) condition, $t(247) = -0.17$, $p = .87$, $d = -0.02$. However, participants blamed others for the exclusion event much more when the exclusion was deliberate ($M = 5.11$, $SD = 1.93$) versus unintentional ($M = 2.94$, $SD = 2.02$), $t(247) = 8.65$, $p < .001$, $d = 1.10$ (large effect, exceeds MDES). Participants who were unintentionally excluded ($M = 3.60$, $SD = 2.22$) were more likely to say that no one was to blame for the event than those who were deliberate excluded ($M = 1.69$, $SD = 1.42$), *Welch's* $t(200.01) = -8.00$, $p < .001$, $d = -1.02$ (large effect, exceeds MDES). See Figure 8 for a summary.

Figure 8

Condition Differences in Allocating Blame for the Exclusion



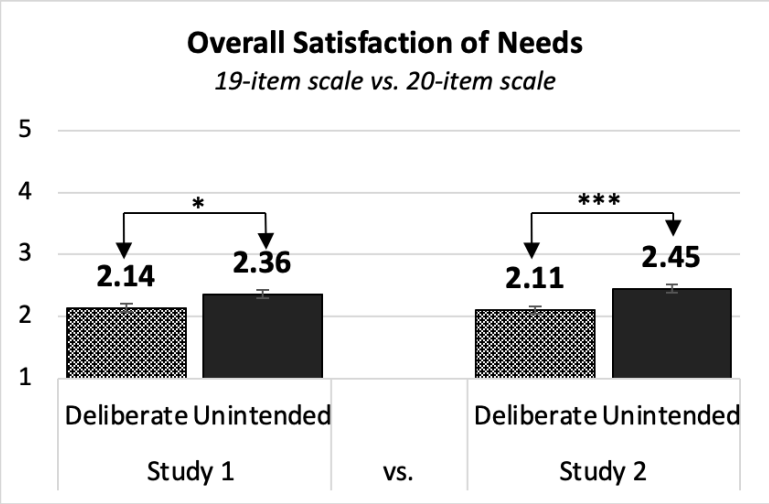
Note. $p < .05$*; $p < .01$**; $p < .001$***

Satisfaction of Basic Need Fulfillment (5-pt scale)

Participants who were deliberately excluded showed less overall basic need fulfillment ($M = 2.11$, $SD = 0.71$), than participants who were unintentionally excluded ($M = 2.45$, $SD = 0.78$), $t(247) = -3.65$, $p < .001$, $d = -0.46$ (small effect, meets MDES). Figure 9 shows a comparison of need fulfillment means observed across both Study 1 and Study 2.

Figure 9

Condition Differences in Overall Satisfaction of Needs



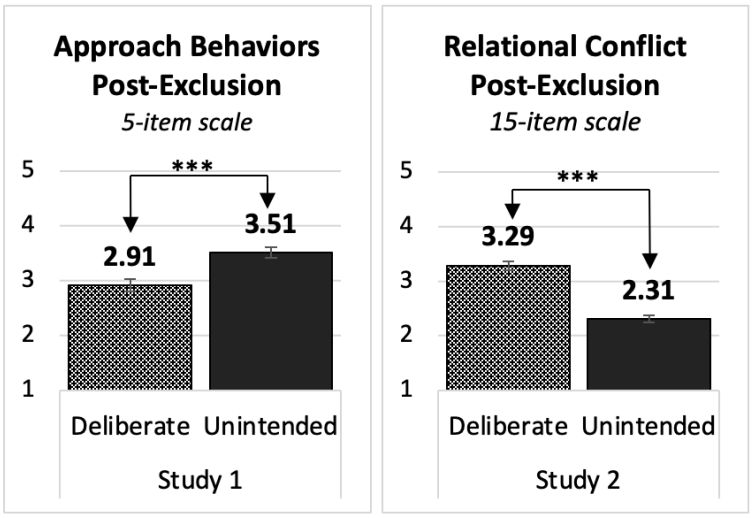
Note. $p < .05$*; $p < .01$**; $p < .001$***

Behavioral Responses Post-Exclusion (5-pt scale)

Group differences in participants' relational conflict and reflection behaviors were analyzed using a MANOVA**.** Results indicated that there was a statistically significant difference between conditions in participants' overall behavioral responses post-exclusion, $F(2, 246) = 46.05$, $p < .001$; Wilk's $\Lambda = 0.73$, $\eta^2 = .27$. Follow-up t-tests indicated showed that deliberately excluded participants reported engaging in significantly more relational conflict behaviors ($M = 3.29$, $SD = 0.87$) than unintentionally excluded participants ($M = 2.31$, $SD = 0.75$), $t(247) = 9.48$, $p < .001$, $d = 1.20$ (large effect, meets MDES). Unlike Study 1, no differences were found in how much deliberately excluded participants ($M = 2.58$, $SD = 0.99$) and unintentionally excluded participants ($M = 2.47$, $SD = 1.05$) engaged in reflection behaviors, $t(247) = 0.86$, $p = .39$, $d = 0.11$. Figures 10 and 11 show a comparison of the behavioral responses post-exclusion observed across both Study 1 and Study 2.

Figure 10

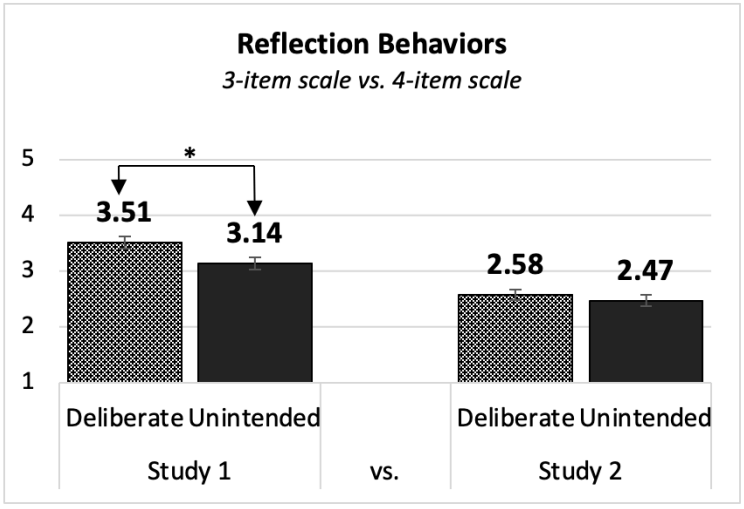
Condition Differences in Approach and Relational Conflict Behaviors Post-Exclusion



Note. $p < .05$*; $p < .01$**; $p < .001$***

Figure 11

Condition Differences in Reflection Behaviors Post-Exclusion



Note. $p < .05$*; $p < .01$**; $p < .001$***

Rejection Sensitivity (7-pt scale)

As participants' individual levels of rejection sensitivity increased, their negative affect, feelings of exclusion, and perception of the event's emotional impact (both in the moment and over time) also increased after exclusion of either type (see Table 8).

Participants' basic psychological need fulfillment, on the other hand, decreased (across both conditions) as rejection sensitivity increased. In the deliberate exclusion only, greater rejection sensitivity was also associated with the perception that the event was more negative, as well as increased self-blame for the exclusion.

Loneliness (5-pt scale)

Across both exclusion conditions, we found that as participants' self-reported loneliness increased, their experience of negative affect and their perception of the event's impact over time also grew, while their basic psychological need fulfillment decreased. In the unintentional exclusion condition only, greater loneliness was also positively associated with greater feelings of exclusion. Overall, participants' loneliness and rejection sensitivity were positively correlated with one another, with a Pearson's *r* value of 0.53 ($p < .001$).

Table 8

Correlations Between Rejection Sensitivity, Loneliness, and Dependent Variables

	Rejection Sensitivity		Loneliness	
	Unintentional	Deliberate	Unintentional	Deliberate
Intentionality	-0.08	-0.06	-0.02	-0.05
Valence of event	-0.06	**-0.20***	-0.11	-0.09
Impact in the moment	**0.25****	**0.25****	0.17	0.02
Impact over time	**0.29****	**0.35*****	**0.19***	**0.20***
Negative affect	**0.38*****	**0.40*****	**0.24****	**0.27****
Feelings of exclusion	**0.23***	**0.24****	**0.25****	0.16
Blame self	0.06	**0.28****	0.03	0.12
Blame others	-0.04	-0.10	0.17	-0.04
Blame no one	-0.07	0.03	-0.14	0.05
Need fulfillment	**-0.33*****	**-0.40*****	**-0.38*****	**-0.19***
Conflict behaviors	0.06	0.02	0.15	0.01
Reflection behaviors	0.16	0.14	-0.01	0.01

Note. $p < .05$*; $p < .01$**; $p < .001$***

Discussion of Study 2

Study 2 successfully replicated the majority of the findings from Study 1, demonstrating that the results from a student sample were generalizable to a broader MTurk sample. As in Study 1, results indicated that experiences of deliberate exclusion appeared to have greater psychological consequences than unintentional exclusion, as evidenced by participant reports of feeling more excluded (supporting *Hypothesis I*), experiencing less satisfaction of their basic psychological needs (*RQ I*), and feeling greater negative affect (*RQ II*) when excluded deliberately. As compared to unintentionally excluded participants, deliberately excluded participants reported more conflict behaviors after exclusion and, in Study 2, we found that they also blamed others more for their exclusion. These findings were again interpreted in support of *Hypothesis III (a)*, which predicted that deliberately excluded participants would express less desire to affiliate with group members than those unintentionally excluded. We were once again unable to evaluate how participants varied in their specific satisfaction of their belonging or meaning in life needs *(RQ I)*, as the presence of these subscales were not supported by the factor analysis. Notably, previous exploratory factor analyses on a similar version of this basic needs threat scale have also shown a two-factor structure rather than the anticipated four-factor structure (e.g., need for belonging, self-esteem, control, and meaning in life), suggesting that the factor structure of these scales may require additional validation despite their popular use (Gerber, Chang, & Reimel, 2016).

The exploratory analysis of the newly added dependent variables showed similar patterns as the variables described above: deliberate exclusion was perceived to be more negative, more emotionally impactful in the moment, and more emotionally impactful

over time than unintentional exclusion. Interestingly, exclusion was sometimes equally impactful regardless of the ostracizer's perceived intent. Whereas participants were more likely to say no one was to blame for unintentional exclusion, there was no difference in how much they blamed themselves for the exclusion in either scenario. The low values of self-blame reported across both conditions suggest that people largely do not view themselves as responsible for their own social exclusion, regardless of whether they interpreted the exclusion as deliberate or unintentional. Secondly, though people reported deliberate exclusion being more negative an event than unintentional exclusion, both exclusion types were on average rated as being moderately negative to very negative events. Participants also reported relatively low levels of basic psychological need fulfillment (an average score of approximately two on a five-point scale) regardless of exclusion condition, signifying that experiencing exclusion of either type was psychologically damaging. Interestingly, Study 2 did not replicate the finding from Study 1 that deliberately ostracized participants engaged in more reflection behaviors than unintentionally ostracized participants. More research is needed on this theoretical construct to determine whether a real difference exists in how much participants engage in cognitive processing following different types of exclusion.

Additionally, Study 2 found that as people's general rejection sensitivity and self-reported loneliness increased, so did their feelings of negative affect, their loss in basic need fulfillment, and the perceived emotional impact of the exclusion event over time, regardless of condition (*RQ VI & VII*). Rejection sensitivity, specifically, was associated across both conditions with reporting a greater emotional impact from exclusion (in the moment). In the deliberate exclusion condition only, rejection sensitivity was also

associated with perceiving the exclusion as more negative and feeling more self-blame for the event. Surprisingly, loneliness was not associated with greater self-blame in either exclusion condition, despite previous research suggesting that lonely participants make more internal causal attributions for negative social outcomes. However, greater loneliness was associated with greater feelings of exclusion in the unintentional exclusion condition, which is in line with previous findings that suggest loneliness can heighten the perceived extremity of stressors. Greater loneliness and greater rejection sensitivity may consequently make people more susceptible to experiencing some of the psychological consequences of exclusion, though the current data cannot support causal conclusions.

Limitations and Next Steps

In contrast to Study 1, a post-hoc sensitivity analysis demonstrated that the Study 2 sample size was sufficient to detect all but one of the nine statistically significant observed effects. However, both Study 1 and Study 2 were limited in that they relied on participants to self-select exclusion narratives to share, which meant that the experiences people discussed varied widely across participants. Participants recounted experiences that ranged in intensity, recency, and type of relationship (e.g., friends, family, strangers). Their reflections may not have accurately captured their in-the-moment reactions to these events, as memories are often biased by the passage of time. Though autobiographical narratives provide valuable insight into people's real-life experiences of social exclusion, they cannot control for the effects of these external variables.

A second limitation of this study design is that the results cannot be used to determine whether a model of *incremental growth* or *resolved threat* better describes the relationship between the two exclusion conditions. Across both models, negative

outcomes in the deliberate exclusion condition are predicted to be worse than the unintentional ostracism condition; therefore, the two models differ primarily based on the observed relationship between the control and unintentional ostracism conditions. However, due to the challenges of creating an appropriate control writing prompt for recall tasks, Study 1 and Study 2 did not include a control condition comparison. In Studies 3 and 4, we addressed both of these limitations. First, we designed a paradigm where we could hold external variables constant by immersing participants into a real-time group interaction and, second, we varied the interaction so that participants experienced either deliberate ostracism, unintentional ostracism, or a typical everyday social experience.

Study 3: Online Chatboard Paradigm Pilot

The results of Study 1 and Study 2 indicated that the ostracizers' perceived intent to exclude differentially affected how people responded to being left out. Building upon this finding, we sought to experimentally compare in a lab setting how people's attributions of the ostracizer's intent affected their reactions to ostracism. Many experimental exclusion paradigms (such as Cyberball) rely on manipulations where the ostracizing behavior is so overwhelmingly persistent that it leaves little room to be interpreted as anything other than intentional. For example, in many Cyberball games, the paradigm is designed so that the real participant receives two ball tosses at the beginning of the game and then none at all for the remaining 40 ball tosses between the other players. To address this limitation of traditional exclusion paradigms, we designed a new experimental paradigm to create an immersive online group interaction where the group members' intent to ostracize appeared either ambiguous (i.e., potentially unintentional) or

deliberate. First, we conducted Study 3 as a pilot study to confirm that the unintentional ostracism condition did in fact create an experience of ostracism as compared to a control condition. In our follow-up Study 4, we then introduced the deliberate ostracism condition for comparison using the same chatboard paradigm materials. In Study 3, we evaluated evidence for the following hypotheses and research questions.

Hypotheses

Hypothesis II

We predicted that participants who were ostracized would report lower overall fulfillment of their basic psychological needs than participants in the control condition.

Research Questions

Research Question III.

How did control participants compare to unintentionally ostracized participants in their attitude toward their group members?

Method

Participants

Participants (N = 157) were undergraduate students recruited from the university's participant pool. Participants were 75% female, with an average age of 19.88 (SD_{age} = 3.10). The participant sample was approximately 50% White, 22% Hispanic/Latino, 13% Black, 13% Asian, and 2% American Indian or Pacific Islander. Participants received academic research credit as compensation for participating.

Measures

Attitude toward Group Members. To assess participants' attitudes toward their group members, participants were asked five questions each about Participant 2 and 3: "I

think I would get along well with P2/P3;" "I think I have a lot in common with P2/P3;" "P2/P3 seems likable;" "I would like to get to know P2/P3 better;" and "I would like to work with P2/P3 again if I were to participate in a follow-up study" (1 = "not at all"; 5 = "very much"). An exploratory factor analysis (using principal axis factoring) showed that the items loaded onto a single factor that explained 48.50% of the total variance (see Appendix C). Items were consequently averaged together into a single score to represent the participants' overall attitude toward their group members. The overall group attitude scale had excellent reliability, with a Cronbach's alpha score of .90. All inter-item correlations were significant ($p < .01$), with coefficients ranging from .21 to .80. The same group attitude items were additionally computed into an average attitude toward Participant 2 (five items) and an average attitude toward Participant 3 (five items), to determine whether the two participants' roles in the ostracism experience were perceived differently. Both subscales also demonstrated good reliability ($\alpha = .81$ and $\alpha = .85$, respectively).

Feelings of Connection. Three exploratory items (created for this study) evaluated whether the icebreaker activity influenced participants feelings of connection to their group, their culture, or their past (e.g., "The video icebreaker activity made me feel connected to my group/my culture/my past"). Answer options ranged from 1 ("not at all") to 5 ("very much").

Satisfaction of Basic Need Fulfillment. To assess self-esteem in the current moment, participants responded to five present-tense items from the basic need fulfillment esteem subscale used in Studies 1 and 2 (e.g., "I feel good about myself"). The remaining 14 items from the belonging, control, and meaning in life subscales were

revised to describe how participants anticipated feeling during the upcoming group collaboration task (e.g., “In the upcoming tasks, I feel like the other members of the group will decide everything”). All items were rated on a five-point scale (1 = “not at all”; 5 = “very much”). An exploratory factor analysis (using principal axis factoring) was conducted on the full revised scale and indicated, as in previous analyses, that items were divided into two factors based on the valence of the item wording rather than separate conceptual factors (see Table 9). Items were therefore averaged again into a total need fulfillment score and demonstrated good reliability as a scale ($\alpha = .89$); however, 28 of the inter-item correlations were not statistically significant. Items were alternatively computed into a self-esteem subscale score to create a point of comparison with Study 4 and to acknowledge that the self-esteem items conceptually differed from the remaining items by asking participants for global evaluations of the self rather than their expectations for need fulfillment within the specific group task. Both the self-esteem subscale ($\alpha = .80$; all but two of the inter-item correlations were significant) and the task-specific need fulfillment subscale ($\alpha = .87$; twelve inter-item correlations were statistically nonsignificant) demonstrated good reliability.

Table 9

EFA Pattern Matrix Loadings for Revised Need Fulfillment Items

Item	Hypothesized subscale	Factor	
		I	II
I feel liked	Esteem	**0.83**	-0.05
My self-esteem is high	Esteem	**0.81**	-0.02
I feel good about myself	Esteem	**0.76**	-0.00
I feel satisfied	Esteem	**0.68**	-0.08
I feel like I will have control over the course of the upcoming group tasks	Control	**0.59**	-0.03
I feel like I will be useful to the group	Meaning	**0.56**	0.14
I feel like I will be important to the group	Meaning	**0.56**	0.28
I feel like I will have the ability to significantly alter events in the upcoming group tasks	Control	**0.49**	0.02
I feel like I will belong to the group	Belonging	**0.33**	0.25
In the upcoming tasks, I feel like the other members of the group will interact with me a lot	Belonging	**0.33**	0.27
I feel like I will be meaningless to the group (R)	Meaning	0.03	**0.79**
I feel like I will be invisible to the group (R)	Meaning	-0.07	**0.79**
I feel like I will be rejected by the group (R)	Belonging	-0.00	**0.75**
I feel like I will be disconnected from the group (R)	Belonging	0.03	**0.72**
I feel like I will be an outsider in the group (R)	Belonging	-0.02	**0.72**
I feel like I will be nonexistent within the group (R)	Meaning	0.02	**0.69**
In the upcoming tasks, I feel like the other members of the group will decide everything (R)	Control	0.05	**0.63**
In the upcoming tasks, I feel like I will be unable to influence the actions of the group (R)	Control	-0.04	**0.56**
I feel insecure (R)	Esteem	0.07	**0.34**
Factor correlation			
I		5.97 (23.70%)	
II		0.43	2.14 (44.4%)

Note. Boldface indicates factor loadings > .30. Factor Eigenvalues and percent of variance explained by the factor are depicted on the diagonal. The correlation between the two factors is shown below the diagonal. All indices (Bartlett's test, KMO, MSA statistics) indicated that this data was factorable. Overall KMO value was .85. Principal axis factoring with direct oblimin rotation was used. Factors with an Eigenvalue above 1 were retained.

Procedure

Group icebreaker. Participants were informed that the purpose of the research study was to investigate how online groups collaborated remotely. Upon arriving at the research lab, a research assistant seated them at a computer with an online chatboard open in a web browser and informed them that they would be communicating with the study researcher and their two remote group members (who were allegedly student participants located in other rooms) over the chatboard. The chatboard researcher began by asking the participants to record a 1-minute introductory video of themselves responding to the following icebreaker prompt: *"We'd like you to introduce yourselves to group members and tell them what your favorite TV show was as a kid – explain what it was about and tell us what you liked about it. Feel free to share any memories you have associated with it and please be as detailed and descriptive as possible."* Participants were instructed to record and upload their videos sequentially; therefore, Participant 1 (the real participant) recorded and uploaded their video first, then Participant 2 allegedly recorded and uploaded their video, and so on. In reality, the introductions from Participant 2 and 3 were prerecorded videos that were uploaded by a research assistant. The gender of the actors in the prerecorded videos was matched to the gender of the real participant (i.e., a male participant would see videos uploaded by two male group members). The order of the actors was also counterbalanced so that 50 percent of participants saw Actor 1 pretending to be Participant 2, and the remaining 50 percent of the participants saw Actor 2 pretending to be Participant 2.

Participants were randomly assigned at the beginning of the study to either the control condition ($N = 75$) or the unintentional ostracism condition ($N = 82$). In the

control condition, Participant 2 and 3 each talked about their own distinct favorite TV show ("Paige's Pages" and "The Ultras," respectively—both fabricated for the purpose of this study). In the *unintentional ostracism condition*, Participant 2 talked about Paige's Pages and Participant 3 excitedly affirmed in their video that Paige's Pages was also one of their favorite childhood TV shows. The real participant did not have the opportunity to respond to the other participants in any way after this content was shared, as they had already uploaded their introductory video first. After all the three introductory videos were posted, the researcher then informed participants it was time to move on to the next part of the study, which participants were told would involve an online survey followed by an online collaborative group task.

Survey after Icebreaker. Immediately following the icebreaker activity, participants completed an online survey responding to questions about their attitudes toward their group members (10 items), their feelings of connection during the icebreaker (3 items), their current feelings of self-esteem (5 items), and their expectations of basic psychological need fulfillment in the upcoming group task (14 items). The survey concluded with demographic questions (3 items). Participants were then informed that there would be no collaborative group task and were fully debriefed on the true purpose of the study.

Results of Study 3

Post-Hoc Sensitivity Analysis

A post-hoc sensitivity analysis was conducted in the *G*Power* program with alpha (α) set to 0.05 and power ($1 - \beta$) set to .80 for a two-tailed test. This analysis indicated that with the given sample size of 157 participants, the minimum detectable

effect size (MDES) that an independent samples t-test would be able to identify was a Cohen's *d* of 0.45.

Attitude toward Group Members (5-point scale)

Participants' overall attitude toward their group members (computed as an average of the 10 attitude items) did not differ depending on whether they were in the control condition ($n = 75$; $M = 3.67$, $SD = 0.64$) or unintentional ostracism condition ($n = 83$; $M = 3.53$, $SD = 0.62$), $t(155) = 1.34$, $p = .18$, $d = 0.22$. There were no condition differences in participants' attitudes toward Participant 2 specifically, $t(155) = 0.50$, $p = .62$, $d = 0.08$; nor were there condition differences in participants' attitudes toward Participant 3, $t(155) = 1.96$, $p = .052$, $d = 0.31$.

Feelings of Connection (5-point scale)

There was no significant difference in how much the icebreaker made participants feel connected to their group in the control condition ($M = 2.83$, $SD = 1.10$) versus the unintentional ostracism condition ($M = 2.61$, $SD = 1.11$), *Welch's* $t(154.07) = 1.23$, $p = .22$, $d = 0.20$. However, when four outliers in the unintentional ostracism condition were removed, the difference between the control ($M = 2.83$, $SD = 1.10$) and unintentional ostracism condition ($M = 2.49$, $SD = 0.99$) became significant, *Welch's* $t(148.11) = 2.01$, $p = .046$, $d = 0.33$ (small effect). No significant difference was found between conditions in how connected participants felt to their culture [*Welch's* $t(153.27) = -0.25$, $p = .81$, $d = -0.04$] or in how connected participants felt to their past, *Welch's* $t(154.88) = 0.76$, $p = .45$, $d = 0.12$.

Satisfaction of Basic Need Fulfillment (5-point scale)

Participants who were unintentionally ostracized reported less fulfillment of their overall basic psychological needs (M = 3.42, SD = 0.64) than participants in the control condition (M = 3.77, SD = 0.49), *Welch's* $t(150.08) = 3.90$, $p < .001$, $d = 0.62$ (medium effect; exceeds MDES). The same need fulfillment items were also alternatively analyzed as two subscales: the self-esteem subscale (five items) and the need fulfillment items specific to the group task (14 items). A MANOVA indicated that there was a significant condition difference within the subscales, $F(2, 154) = 9.72$, $p < .001$; Wilk's $\Lambda = 0.89$, $\eta^2 = .12$. A follow-up t-test indicated that control participants experienced higher task-specific need fulfillment (M = 3.86, SD = 0.49) than did ostracized participants (M = 3.45, SD = 0.68), *Welch's* $t(147.37) = 4.41$, $p < .001$, $d = 0.70$ (medium effect; exceeds MDES). A second follow-up t-test indicated that there was no significant difference between participants' reported self-esteem in the control (M = 3.52, SD = 0.81) versus unintentional ostracism conditions (M = 3.34, SD = 0.81), $t(155) = 1.42$, $p = .16$, d = 0.23. However, when five outliers in the control condition were removed, the difference in self-esteem reported in the control condition (M = 3.66, SD = 0.63) versus the unintentional ostracism condition (M = 3.34, SD = 0.81) became significant, with control participants reporting higher general self-esteem, *Welch's* $t(149.01) = 2.74$, $p < 0.007$, d = 0.44 (small effect).

Discussion of Study 3

Study 3 indicated that the new paradigm successfully induced effects associated with social exclusion in the unintentional ostracism condition, and these effects differed from what was observed in the control condition. Confirming *Hypothesis II*, participants

who were ostracized in the icebreaker activity reported less overall satisfaction of their basic psychological needs than did control participants. We additionally analyzed the needs satisfaction scale as two subscales: participants' need fulfillment specific to the upcoming group task and their general self-esteem. Results indicated that when ostracized participants were asked how much they expected to experience a sense of control, meaning, or social belonging in the upcoming collaborative group task, they reported lower expectations that these basic needs would be fulfilled than did control participants. Initial analyses of participants' general levels of self-esteem did not show significant condition differences; however, when a small number of outliers were removed from the data, ostracized participants reported experiencing lower overall self-esteem than did control participants.

Though we did not explicitly measure participants' feelings of exclusion during the icebreaker (as this would have disrupted the pretense that the study topic was group collaboration), we did ask participants to report how connected they felt to their group. Similar to the self-esteem findings, initial analyses did not find a significant condition difference but, when outliers were removed, ostracized participants reported feeling less connected to their group than control participants. The evidence for condition differences in explicit feelings of exclusion is therefore mixed depending on which analysis is considered. Finally, the current data did not find that ostracized participants expressed a more negative attitude toward their ostracizers than control participants *(RQ III)*, which may indicate that unintentionally ostracized individuals are still invested in positive future interactions with their group members. Overall, this study confirmed previous literature findings that very mundane (and seemingly innocuous) social interactions—

such as watching two peers share excitement over a common interest—can cause people to both perceive themselves more negatively and to expect less fulfilling social interactions in the immediate future.

Limitations and Next Steps

While the post-hoc sensitivity analysis confirmed that the current sample size was large enough to reliably detect the significant condition difference between participants' task-specific need fulfillment, caution should be used when interpreting the significant observed effects of condition on participants' self-esteem and feelings of connection with their group. The current study design was underpowered in detecting effects of this size. Additionally, as this study served as a pilot of the unintentional ostracism condition specifically, it did not include a more traditional deliberate ostracism condition for comparison, nor did it attempt to investigate how participants' behavior toward the ostracizers was affected by the ostracism experience. Study 4 incorporated both a deliberate ostracism condition and a real collaborative group task following the icebreaker activity to address these limitations and to investigate how participants engaged with their group members post-ostracism.

Study 4: Online Chatboard Paradigm with Deliberate Ostracism Condition

The same paradigm piloted in Study 3 was employed in Study 4, with the addition of a third deliberate ostracism condition and a real collaborative group task following the icebreaker activity. To explore how individual-level variables might affect reactions to being unintentionally or deliberately ostracized, measures of rejection sensitivity and general loneliness were collected prior to participants signing up for the study. The dependent variables were also expanded to include measures of the participants' affect

during the icebreaker activity and the participants' motivations and effort during the collaborative group task. In Study 4, we evaluated evidence for the following hypotheses and research questions.

Hypotheses

Hypothesis I

Compared to the control and unintentional ostracism conditions, we predicted that participants who were excluded deliberately would report greater feelings of exclusion.

Hypothesis II

We predicted that participants experiencing either type of ostracism would report lower overall fulfillment of their basic psychological needs than participants in the control condition.

Hypothesis III

Compared to the control and unintentional ostracism conditions, we predicted that participants who were deliberately excluded would report *(a)* less desire to affiliate with group members and *(b)* a more negative attitude toward their group members.

Research Questions

Research Question I

How did the participants' *(a)* overall satisfaction of their basic psychological needs, *(b)* satisfaction of belonging needs, and *(c)* satisfaction of meaning in life needs compare between the deliberate and unintentional ostracism conditions?

Research Question IIb

How did participant affect vary between deliberate ostracism, unintentional ostracism, and control conditions?

Research Question III

How did control participants compare to unintentionally ostracized participants in their attitude toward their group members?

Research Question IV

How did control participants compare to unintentionally ostracized participants in their desire to affiliate with their group members?

Research Question V

How did participants across the control, unintentional ostracism, and deliberate ostracism compare in their effort on a collaborative group task?

Research Question VI

What, if any, association exists between individual-level rejection sensitivity and participant outcomes after experiencing either deliberate or unintentional ostracism?

Research Question VII

What, if any, association exists between general loneliness and participant outcomes after experiencing either deliberate or unintentional ostracism?

Method

Participants

Participants (N = 178) were undergraduate students recruited from the university's participant pool. The participant sample was 78% female, with an average age of 19.94 (SD_{age} = 3.95). The participant sample was approximately 50% White, 23% Hispanic/Latino, 13% Asian, 12% Black, and less than 2% American Indian or Pacific Islander. Participants received academic research credit for participating.

Measures

Rejection Sensitivity. Ronen and Baldwin's (2010) six items from Study 2 were used again to measure participants' overall sensitivity to social rejection (-3 = "strongly disagree"; +3 = "strongly agree"). An additional exploratory factor analysis (see Appendix D) confirmed that items continued to load onto a single factor that explained 66.40% of the total variance, so items were again averaged into a single rejection sensitivity score. The scale had excellent reliability ($\alpha = .92$), and all inter-item correlations were statistically significant ($p < .001$), ranging from .48 to .79.

Loneliness. The same three loneliness items from Study 2 were used again to measure participants' general loneliness on a 5-point scale (1 = "never"; 5 = "very often"). An exploratory factor analysis (see Appendix D) again confirmed that items loaded onto a single factor that explained 64.30% of the total variance, so items were averaged into a single loneliness score. The scale had good reliability ($\alpha = .83$), and all inter-item correlations were significant ($p < .001$), ranging from .55 to .71.

Attitude toward Group Members. The same 10 items from the Study 3 pilot were used to measure participants' attitudes towards their group members. A second factor analysis confirmed that the items could again be averaged together into a single "group attitude" factor that explained 52.00% of the total variance (see Appendix D). The overall group attitude scale again had excellent reliability with a Cronbach's alpha score of .91. The inter-item correlations between the 10 items were all significant ($p < .001$), with coefficients ranging from .29 to .70. The items were also alternatively computed as an average attitude score toward Participant 2 (five items) and an average attitude score toward Participant 3 (five items). Both subscales showed good reliability: the Participant

2 attitude subscale had a Cronbach's alpha score of .84, and the Participant 3 attitude subscale had an alpha score of .88.

Affect. Participants were told that researchers were interested in knowing for future studies how much participants enjoyed the icebreaker activity. Participants were asked to what degree the video icebreaker activity made them feel negative affect (six items: bad, sad, angry, upset, jealous, isolated) and positive affect (six items: good, happy, connected, competent, respected, proud). Five-point response options were used for all items (1 = "not at all"; 5 = "very much"). These were the same items used by Deri and Zitek (2017), with our addition of the "isolated" and "connected" items. An exploratory factor analysis (see Appendix D) indicated that, as expected, the items represented two factors based on valence (positive versus negative affect). This two-factor solution explained 62.80% of the total variance. We therefore averaged the six positive affect items together ($\alpha = .90$) and separately averaged the six negative affect items together ($\alpha = .90$). Inter-item correlations for the positive affect subscale were all statistically significant ($p < .001$) and ranged from .52 to .88. The negative affect items similarly demonstrated statistically significant inter-item correlations ($p < .001$) and ranged from .42 to .81. The "isolated" and "connected" items were also analyzed as individual manipulation check items to compare participants' feelings of exclusion between the three conditions.

Satisfaction of Basic Need Fulfillment. The same 19-item need fulfillment scale from the Study 3 pilot was used in this study. We ran an additional exploratory factor analysis on these items and, in contrast to the pilot study, this data's analysis suggested that there were two conceptually distinct factors: the five general esteem items (e.g., "I

feel good about myself") and the remaining 14 task-specific items (e.g., "In the upcoming tasks, I feel like the other members of the group will decide everything"). This two-factor solution explained 55% of the total variance. Therefore, averages were computed for these subscales, but the total average of all 19 items was also computed to serve as a comparison point for the previous studies. The overall scale demonstrated excellent reliability ($\alpha = .94$; all inter-item correlations were significant, $p < .01$); the self-esteem subscale ($\alpha = .86$) and task-specific need fulfillment subscale ($\alpha = .94$) also demonstrated strong reliability.

Effort in Group Task. Effort was behaviorally measured by counting the number of words participants generated during the group word game task. Effort was also measured through two self-reported items: "How much effort did you invest in your performance in the previous game?" (1 = "no effort at all"; 5 = "a lot of effort") and "I tried hard to do well in the game" (1 = "not at all"; 5 = "very much"). As these two items were significantly correlated ($r = .64$, $p < .001$), they were averaged together into a single effort score.

Motivations During Group Task. Seven items were developed for this study to measure participants' motivations during the group game, including participants' desire to show competence (e.g., "I wanted to demonstrated my skill in the game"; "I wanted to be the best player"), desire to affiliate with the group ("I wanted to work with a partner in the next game"; "I wanted the group to succeed in the game"; "I wanted my team members to think highly of me"), desire to withdraw (e.g., "I wanted to work by myself in the next game"), and desire to punish their group members (e.g., "I didn't want the other group members to work together in the next game"). Response options ranged from

1 (“not at all”) to 5 (“very much”). An exploratory factor analysis using principal axis factoring (see Table 10) indicated a one-factor structure that explained 28.10% of the variance, with two items failing to load above .40 on the factor. The remaining five items were averaged together and interpreted as representing a desire to affiliate with the group. The affiliation motivation scale demonstrated acceptable reliability with a Cronbach’s alpha of .72. All but one of the inter-item correlations were significant ($p < .01$), and the significant correlations ranged from .25 to .56. Wanting the group to succeed at the game and wanting to be the best player in the game were not found to correlate with one another.

Table 10

EFA Pattern Matrix Loadings for Motivation Items

	Factor
	I
Item	
I wanted my team members to think highly of me.	**0.79**
I wanted to demonstrate my skill in the game.	**0.66**
I wanted to work with a partner in the next game.	**0.61**
I wanted to be the best player.	**0.51**
I wanted the group to succeed in the game.	**0.40**
I wanted to work by myself in the next game. (R)	-0.30
I didn’t want the other group members to work together in the next game. (R)	0.20
Factor characteristics	
I	1.97 (28.10%)

Note. Boldface indicates factor loadings > .40. Factor Eigenvalues and percent of variance explained by the factor are depicted under factor characteristics. All indices (Bartlett’s test, KMO, MSA statistics) indicated that this data was factorable. The overall KMO value was .67. Principal axis factoring was used, and factors with an Eigenvalue above 1 were retained.

Procedure

Prescreening Survey. A baseline measurement of participants' rejection sensitivity and general loneliness was collected through a survey administered by the university at the beginning of the academic quarter. Because this survey was not administered as part of the study protocol, participants were unaware that the questions were related to the study topic. However, because the prescreening survey was voluntary, only 79% (n = 140) of the study participants chose to complete it.

Group Icebreaker. The study introduction and initial icebreaker activity procedure were identical to the pilot study procedure for participants in the control and unintentional ostracism conditions; however, an additional deliberate ostracism condition was also included in this study. In the new deliberate ostracism condition, the same videos as the unintentional condition were shown (where Participant 2 and Participant 3 both talked about the Paige's Pages television show), but they were followed by an additional brief text conversation in the chatboard between Participant 2 and 3. Participant 2 replied to Participant 3's video upload by writing the following text in the chatboard: *"Oh hey Sarah/Austin, it sounds like we both grew up as big Paige fans haha. It's good to meet you - hopefully we'll get assigned to work on the same team for the group task."* Participant 3 responded by writing, *"haha maybe we'll get to be a two person team!"* Before the real participant had an opportunity to join the conversation, the chatboard researcher sent a message reminding the participants that they were not to post messages in the chatboard unless they were directly instructed to do so. The researcher then told participants it was time to move on to the next part of the study which would involve a short survey followed by an online collaborative group task.

Survey and Group Task. Immediately after the icebreaker interaction, participants completed an online survey about their attitude toward their group members (10 items), the level of positive affect (6 items) and negative affect (6 items) they felt during the icebreaker, their current self-esteem (5 items), and their expectation that their basic psychological needs would be satisfied during the upcoming group task (14 items). They were then told that they were going to engage in a short collaborative group task (a game of "Boggle") where their job was to earn as many points as possible for their team by identifying the maximum number of words in a 4 x 4 letter grid. The rules of the game were explained to them in detail, and participants were told that at the end of the game, their team would be able to see the percentage of points each person contributed to the game. The two players who contributed the highest percentage of points for the team would go on to work together in the next game, and the lowest contributor would work alone for the next game. Participants then played a round of Boggle where they were then given two minutes to find as many words in the letter grid as possible. After the game finished, participants completed the final survey questions where they reported their motivations during the group task (5 items) and completed demographic questions (3 items). These items concluded the study, and participants were then thanked and fully debriefed.

Transition in Study Format. Due to the coronavirus pandemic, data collection for this study transitioned from an in-person format to an online format halfway through the data collection period. Ninety participants (51%) participated through the in-person lab format described above, and the remaining participants participated online from their own homes. Online appointments were conducted in real time, and participants were

given instructions for how to log on to the online chatboard from their own computers. Once they were logged on, the remainder of the study protocol was conducted identically as the in-person protocol, with the exception that a lab researcher was not physically present to monitor the participants' activity. Two-way ANOVAs using "study format" as an independent variable in combination with the condition did not reveal any interaction effects stemming from the transition in the study format. However, we did find two main effects of format. Unexpectedly participants overall reported *reduced* feelings of loneliness ($M = 2.75$, $SD = 0.88$) after social distancing guidelines had been put into effect (and the study had transitioned to an online-only format) than they did when the study was conducted in-person ($M = 3.11$, $SD = 0.89$), $t(138) = 2.37$, $p < 0.05$, $d = 0.40$, $\eta^2 = .04$. Participants in the online-only version of the study also reported feeling *less* negative affect during the icebreaker activity ($M = 1.33$, $SD = 0.60$) than did in-person participants ($M = 1.60$, $SD = 0.60$), *Welch's* $t(163.59) = 2.55$, $p < 0.05$, $d = 0.38$, $\eta^2 = .03$.

Results of Study 4

Post-Hoc Sensitivity Analysis

A post-hoc sensitivity analysis was conducted in the *G*Power* program with alpha (α) set to 0.05 and power ($1 - \beta$) set to .80 for a two-tailed test. This analysis indicated that with the given sample size of 178 participants across three groups, the minimum detectable effect size (f) that an ANOVA would be able to identify was .23 or, alternatively, an η^2 value of .05. The η^2 value was computed by taking the corresponding f^2 value (.0529) and dividing it by one plus the f^2 value.

Attitude toward Group Members (5-point scale)

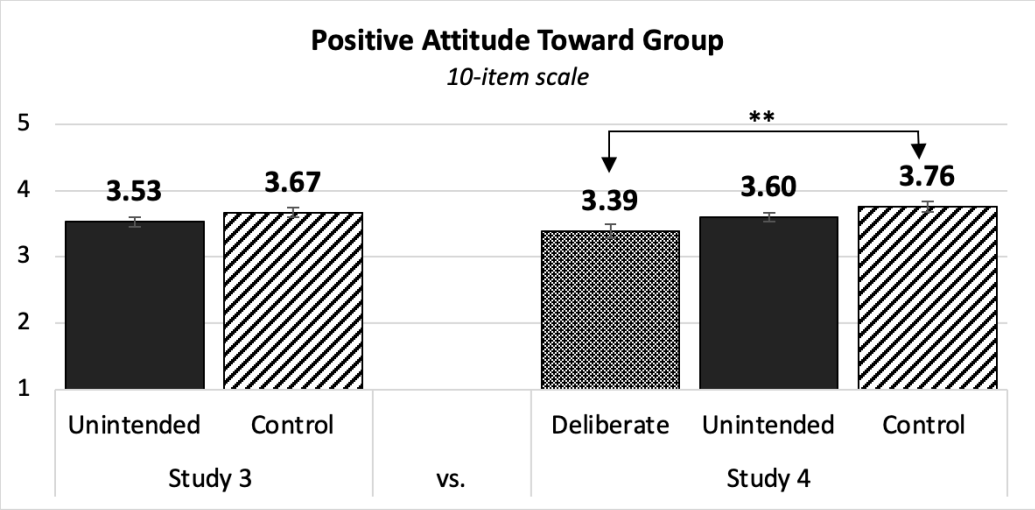
A one-way between-subjects ANOVA indicated that there was a significant difference in participants' overall attitude toward their group members depending on assigned condition, $F(2, 175) = 4.60$, $p = .011$, $\eta^2 = .05$ (small effect). Post-hoc comparisons using a Tukey HSD test showed that participants in the deliberate ostracism condition ($n = 58$; $M = 3.39$, $SD = 0.78$) reported significantly more negative attitudes ($p < .01$) toward their group members than did participants in the control condition ($n = 58$; $M = 3.76$, $SD = 0.61$). The attitudes of participants in the unintentional ostracism condition ($n = 58$; $M = 3.60$, $SD = 0.56$) did not significantly vary from the control or deliberate conditions. See Figure 12 for a comparison of participants' overall attitude toward their group members across both Study 3 and Study 4.

When attitudes toward Participant 2 and Participant 3 were analyzed individually, there were no significant differences in attitudes toward Participant 2 between the deliberate ostracism ($M = 3.43$, $SD = 0.77$), unintentional ostracism ($M = 3.60$, $SD = 0.56$), or control condition ($M = 3.72$, $SD = 0.70$), $F(2, 175) = 2.70$, $p = .07$, $\eta^2 = .03$. However, attitudes toward Participant 3 significantly differed based on condition, *Welch's* $F(2, 114.00) = 4.84$, $p = .01$, *est.* $\omega^2 = .05$, $\eta^2 = .06$ (medium effect, exceeds MDES)[1]. A post-hoc Games-Howell test indicated that deliberately ostracized participants ($M = 3.35$, $SD = 0.88$) reported significantly more negative attitudes ($p = .004$) toward Participant 3 than did control condition participants ($M = 3.80$, $SD = 0.66$). There were no significant differences between the unintentional ostracism condition ($M = 3.59$, $SD = 0.65$) and the other conditions.

[1]The adjusted omega squared value is interpreted as the percentage of total variance in the dependent variable that is explained by the independent variable.

Figure 12

Condition Differences in Participants' Attitudes toward their Group Members



Note. $p < .05$*; $p < .01$**; $p < .001$***

Feelings of Exclusion (5-point scale)

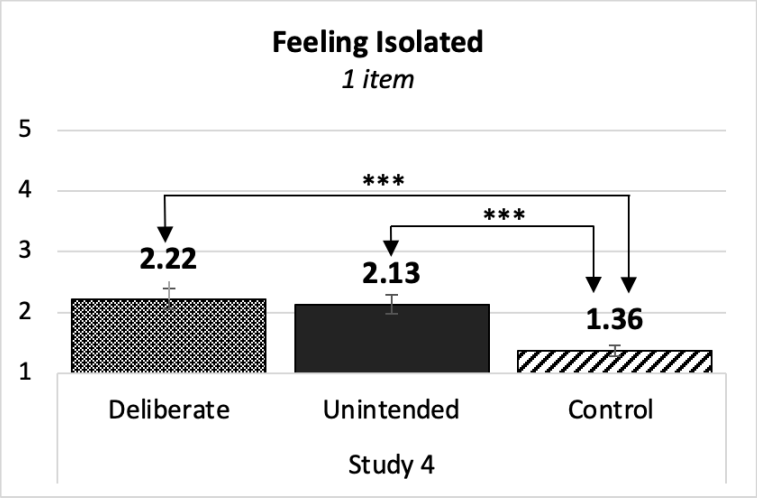
A one-way ANOVA indicated that there was a significant difference in how isolated participants felt during the icebreaker depending on their assigned condition, *Welch's* $F(2, 106.85) = 15.90$, $p < .001$, *est.* $\omega^2 = .14$, $\eta^2 = .11$ (medium effect, exceeds MDES). A post-hoc Games-Howell test showed that participants in the control condition ($M = 1.36$, $SD = 0.67$) felt significantly less isolated ($p < .001$) than did participants in the unintentional ostracism condition ($M = 2.13$, $SD = 1.25$) or the deliberate ostracism condition ($M = 2.22$, $SD = 1.26$). There were no significant differences in feelings of isolation between the two ostracism conditions (see Figure 13).

A second one-way ANOVA also identified a significant difference between conditions in how connected participants reported feeling during the icebreaker activity, $F(2, 175) = 3.96$, $p = .02$, $\eta^2 = .04$ (small effect). Control participants ($M = 3.35$, $SD = 1.07$) felt significantly ($p = .017$) more connected than did deliberately ostracized participants ($M = 2.74$, $SD = 1.19$). There were no significant differences in

unintentionally ostracized participants' feelings of connection (M = 2.95, SD = 1.25) as compared to the other conditions. However, when four outliers were removed from the data set (all located in the control condition), the level of connection reported in the control condition (M = 3.52, SD = 0.89) became significantly greater (p = .014) than the level of connection reported in the unintentional ostracism condition. See Figure 14 for a comparison of participants' feelings of connection across both Study 3 and Study 4.

Figure 13

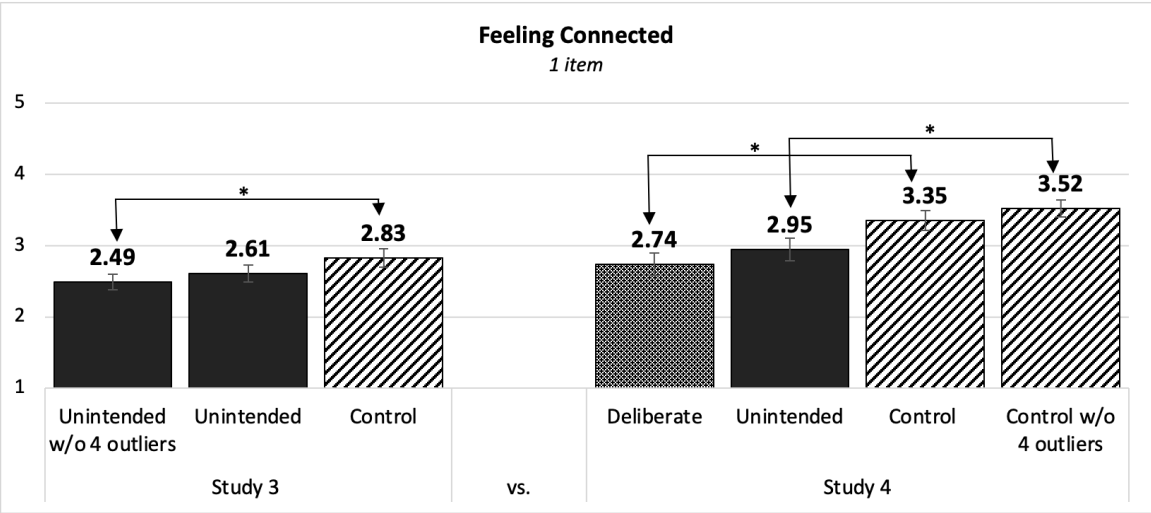
Condition Differences in Participants' Feelings of Isolation



Note. $p < .05$*; $p < .01$**; $p < .001$***

Figure 14

Condition Differences in Participants' Feelings of Connection



Note. $p < .05$*; $p < .01$**; $p < .001$***

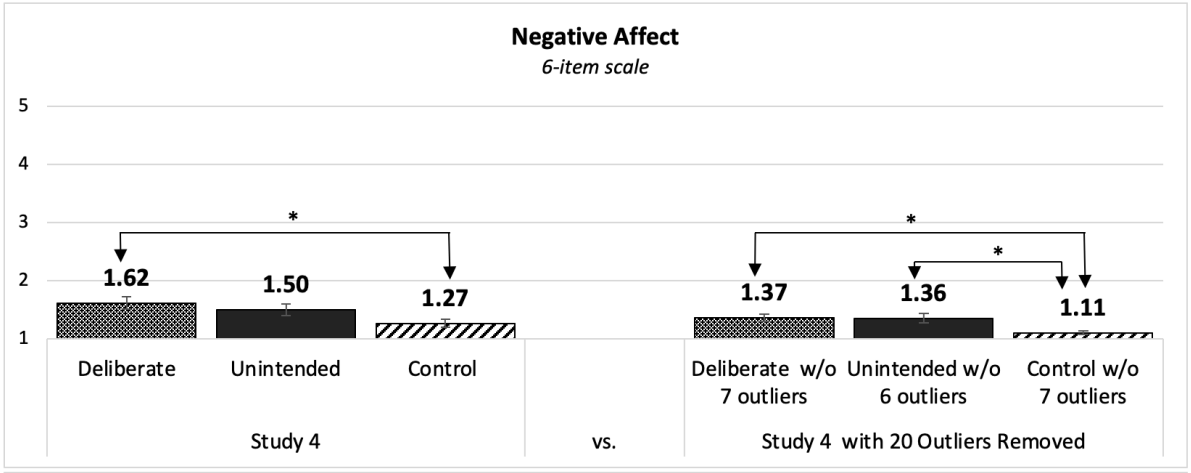
Affect (5-point scale)

A MANOVA indicated no statistically significant differences in affect between conditions, $F(4, 350) = 2.02$, $p = .09$; Wilk's $\Lambda = 0.96$, $\eta^2 = .02$. However, a follow-up ANOVA on the negative affect subscale indicated a significant difference between conditions, *Welch's* $F(2, 111.21) = 4.67$, $p = .011$, *est.* $\omega^2 = .04$, $\eta^2 = .04$ (small effect). Post-hoc comparisons using a Games-Howell test showed that deliberately ostracized participants reported more negative affect ($p = .025$) during the icebreaker activity ($M = 1.62$, $SD = 0.80$) than did control condition participants ($M = 1.27$, $SD = 0.50$). There were no significant differences between the unintentional ostracism condition ($M = 1.50$, $SD = 0.80$) and the other conditions. Notably, when 20 outliers across the three conditions were removed, the overall differences in negative affect between conditions increased, *Welch's* $F(2, 84.76) = 10.82$, $p < .001$, *est.* $\omega^2 = .10$, $\eta^2 = .07$ (medium effect, exceeds MDES). Post-hoc Games-Howell tests indicated that the difference between negative affect in the control condition ($M = 1.11$, $SD = 0.18$) and the unintentional

ostracism condition (M = 1.36, SD = 0.63) also became significant (p = .014). There were no significant condition differences in the positive affect subscale, $F(2, 175) = 2.17$, p = .12, η^2 = .02. See Figure 15 for a comparison of participants' self-reported negative affect across both Study 3 and Study 4. As positive affect was not measured in Study 3, Figure 16 shows participants' self-reported positive affect within conditions from Study 4 only.

Figure 15

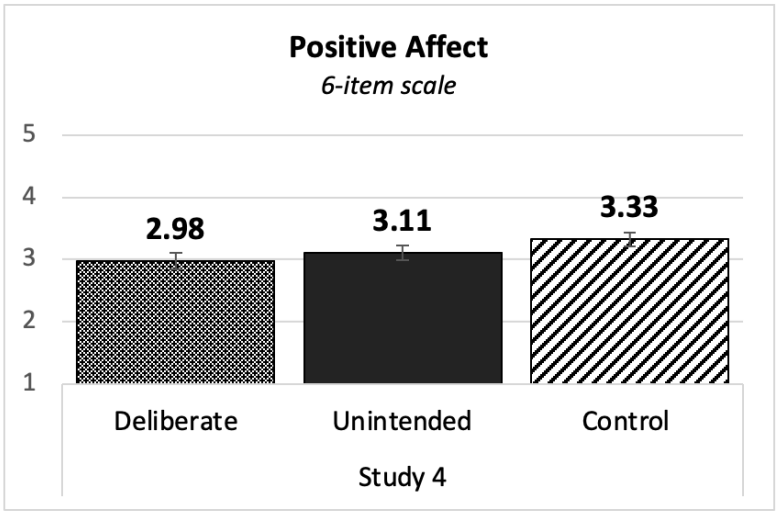
Condition Differences in Participants' Negative Affect



Note. $p < .05$*; $p < .01$**; $p < .001$***

Figure 16

Condition Differences in Participants' Positive Affect



Satisfaction of Basic Need Fulfillment (5-point scale)

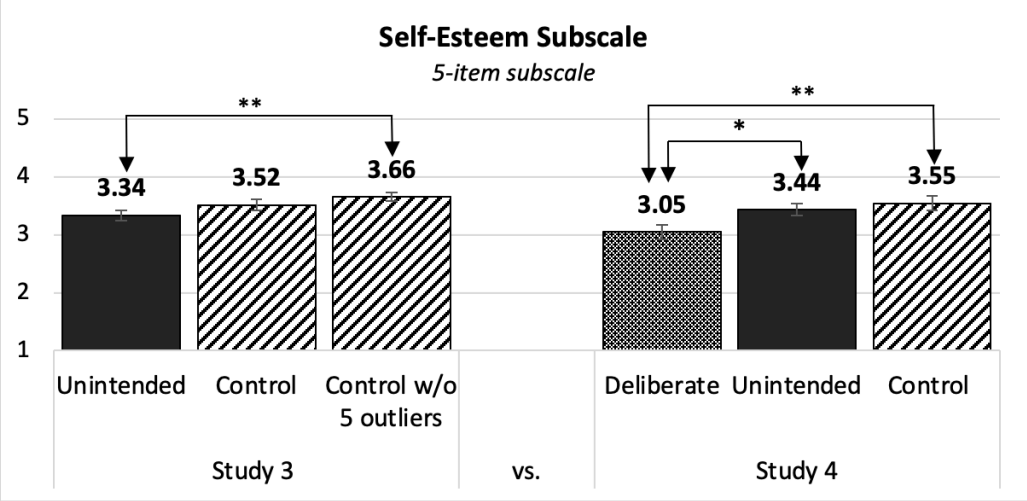
A one-way ANOVA indicated that there were condition differences in the overall basic need fulfillment reported by participants, $F(2, 175) = 16.58$, $p < .001$, $\eta^2 = .16$ (large effect, exceeds MDES). Participants who were deliberately ostracized reported significantly less ($p < .001$) satisfaction of their basic psychological needs ($M = 2.90$, $SD = 0.76$) than unintentionally ostracized participants ($M = 3.40$, $SD = 0.79$) or control condition participants ($M = 3.68$, $SD = 0.64$). The difference between the unintentional ostracism and control condition was not significant; however, when one outlier in the control condition was removed from the analysis, control participants ($M = 3.71$, $SD = 0.60$) reported significantly more ($p = .035$) overall need fulfillment than unintentionally ostracized participants.

A MANOVA was conducted on the same data to analyze potential condition differences within the two subscales identified by the exploratory factor analysis. The analysis indicated a significant overall difference between conditions, $F(4, 350) = 8.91$, $p < .001$; Wilk's $\Lambda = 0.82$, $\eta^2 = .09$ (medium effect, exceeds MDES). Follow-up ANOVAs indicated that there was a significant condition difference in both the self-esteem subscale [$F(2, 175) = 5.36$, $p = .006$, $\eta^2 = .058$ (small effect, exceeds MDES)] and the task-specific need fulfillment subscale, *Welch's* $F(2, 115.29) = 20.73$, $p = .006$, *est.* $\omega^2 = .18$, $\eta^2 = .17$ (large effect, exceeds MDES). Post-hoc Tukey HSD tests showed that the deliberately ostracized participants ($M = 3.05$, $SD = 0.91$) reported significantly lower general self-esteem ($p = .04$) than both the unintentionally ostracized participants ($M = 3.44$, $SD = 0.78$) and the control condition participants ($M = 3.55$, $SD = 0.89$). There was no significant difference in self-esteem reported by control condition participants versus

unintentionally ostracized participants. According to post-hoc Games-Howell tests, deliberately ostracized participants (M = 2.85, SD = 0.80) similarly reported significantly lower ($p < .001$) task-specific need fulfillment than did unintentionally ostracized participants (M = 3.38, SD = 0.87) or control condition participants (M = 3.72, SD = 0.64). Notably, unintentionally ostracized participants also reported significantly less task-specific need fulfillment than did control participants (p = .048). See Figures 17 and 18 for a comparison of participants' self-esteem and task-specific need fulfillment across both Study 3 and Study 4.

Figure 17

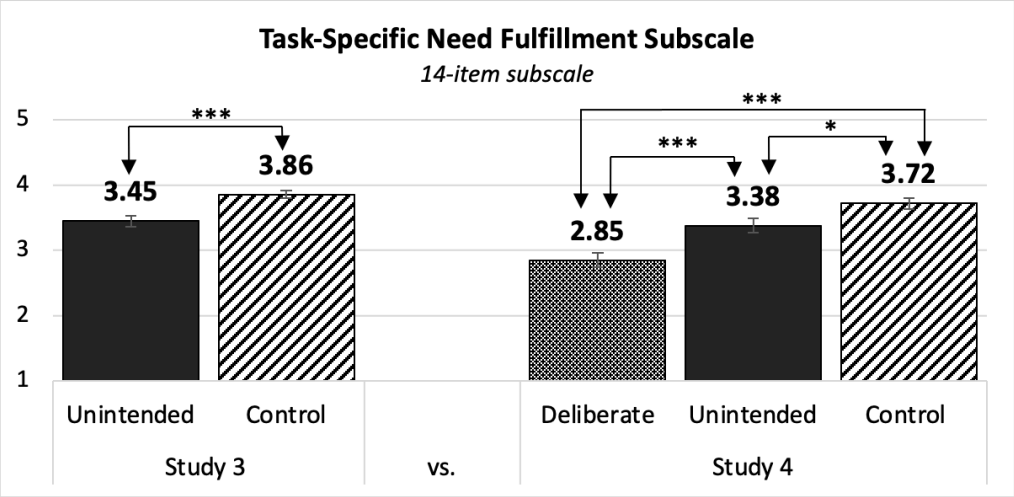
Condition Differences in Participants' Self-Reported Self-Esteem



Note. $p < .05$*; $p < .01$**; $p < .001$***

Figure 18

Condition Differences in Participants' Self-Reported Task-Specific Need Fulfillment



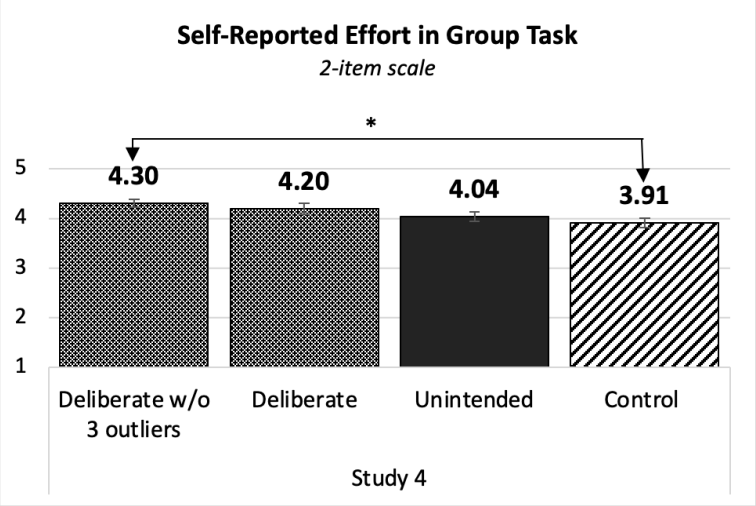
Note. $p < .05$*; $p < .01$**; $p < .001$***

Effort (5-point scale)

Effort was behaviorally measured by counting the number of Boggle words each participant generated during the group game. There were no significant differences in the number of words participants generated depending on whether they were in the control ($M = 9.32$, $SD = 4.23$), unintentional ostracism ($M = 8.53$, $SD = 4.03$), or deliberate ostracism conditions ($M = 8.10$, $SD = 3.88$), $F(2, 174) = 1.33$, $p = .27$, $\eta^2 = .02$. There was also no significant difference in participants' average self-reported effort between the control ($M = 3.91$, $SD = 0.85$), unintentional ostracism ($M = 4.04$, $SD = 0.76$), or deliberate ostracism condition ($M = 4.20$, $SD = 0.71$), $F(2, 174) = 1.96$, $p = .14$, $\eta^2 = .02$. However, when three outliers were removed from the deliberate ostracism condition, participants who were deliberately ostracized ($M = 4.30$, $SD = 0.57$) reported investing significantly greater effort ($p = .017$) on the group task than did control participants, $F(2, 171) = 3.99$, $p = .02$, $\eta^2 = .045$. See Figures 19 and 20 for a summary of participants' self-reported and observed effort across conditions.

Figure 19

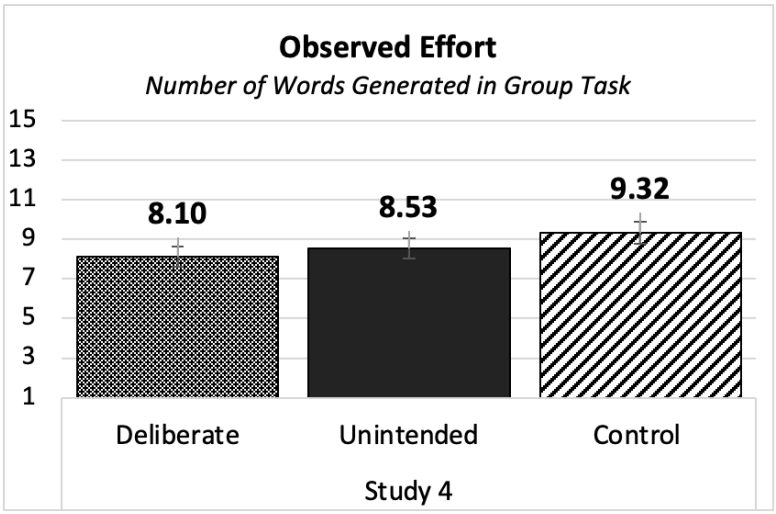
Condition Differences in Participants' Self-Reported Effort in Group Task



Note. $p < .05$*; $p < .01$**; $p < .001$***

Figure 20

Condition Differences in Participants' Observed Effort in Group Task

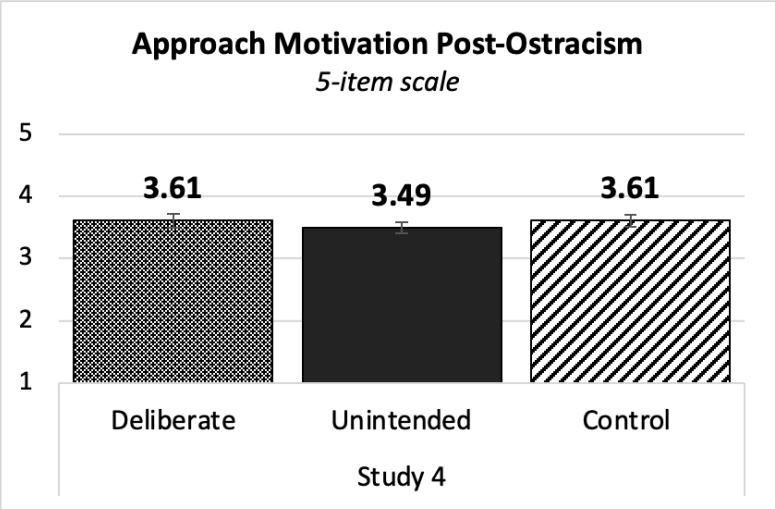


Motivation During Group Task (5-point scale)

There were no significant differences in participants' motivation to affiliate with their group members depending on whether they were in the control (M = 3.61, SD = 0.79), unintentional ostracism (M = 3.49, SD = 0.73), or deliberate ostracism (M = 3.61, SD = 0.87) conditions, $F(2, 174) = 0.46$, $p = .63$, $\eta^2 = .01$ (see Figure 21).

Figure 21

Condition Differences in Participants' Observed Effort in Group Task



Rejection Sensitivity

A higher overall sensitivity to rejection was significantly correlated with lower self-esteem, regardless of participants' assigned condition (see Table 11). However, in the control and deliberate ostracism conditions only, higher rejection sensitivity was associated with participant expectations that their basic needs would be less satisfied during the group task. This association was not found for those unintentionally ostracized.

Loneliness

Greater overall loneliness was associated with stronger negative psychological outcomes primarily in the unintentional ostracism condition. Lonelier participants reported less positive affect and more negative affect during the icebreaker, lower general self-esteem, lower expectations of their basic psychological needs being fulfilled during the group task, and less self-reported effort on the group task. Loneliness was significantly associated with reduced self-esteem in the control condition but was not significantly associated with any of the other measured outcomes in the control or deliberate ostracism conditions.

Table 11

Correlations between Rejection Sensitivity, Loneliness, and Dependent Variables

	Rejection Sensitivity			Loneliness		
	Control	Unintentional	Deliberate	Control	Unintentional	Deliberate
Percentage of participant sample	76% (*n* = 44)	82% (*n* = 51)	78% (*n* = 45)	76% (*n* = 44)	82% (*n* = 51)	78% (*n* = 45)
Attitude toward group	0.05	-0.11	0.03	-0.02	-0.26	0.13
Attitude toward P3	0.15	-0.10	-0.06	0.08	-0.18	0.05
Negative affect	0.27	0.23	0.27	0.17	**0.34***	0.14
Positive affect	-0.29	-0.21	-0.13	-0.20	**-0.47*****	-0.07
Overall need fulfillment	**-0.44****	-0.24	**-0.45****	-0.19	**-0.50*****	-0.29
Self-esteem	**-0.42****	**-0.34***	**-0.34***	**-0.32***	**-0.41****	-0.24
Task-specific need fulfillment	**-0.38****	-0.19	**-0.44****	-0.10	**-0.48*****	-0.28
Effort (number of words)	-0.09	0.13	-0.06	0.02	0.12	0.09
Effort (self-reported)	-0.19	-0.06	0.01	-0.09	**-0.38****	0.01
Affiliative motivation	0.10	0.00	-0.02	0.12	-0.14	0.02

$p < .05$*; $p < .01$**; $p < .001$***

Discussion of Study 4

Comparing Deliberate Ostracism to the Control Condition

The results of Study 4 provided consistent evidence that deliberate ostracism led to a multitude of negative psychological and relational outcomes. As compared to control participants, participants who were deliberately ostracized reported feeling more isolated and less connected to their group during the icebreaker activity (confirming *Hypothesis I*), experienced more negative affect during the icebreaker (*RQ II*) and reported less satisfaction of their overall basic psychological needs (confirming part of *Hypothesis II*). When the basic need subscales were analyzed individually, deliberately ostracized participants were found to report both less general self-esteem and lower expectations that their basic psychological needs would be fulfilled in the upcoming group task. We were not, however, able to evaluate how participants varied in their specific satisfaction of their belonging or meaning in life needs *(RQ I)*, as the presence of these subscales were not supported by the factor analysis. Additionally, contrary to the predictions posed in *Hypothesis III (a)*, deliberately ostracized participants did not significantly differ from control participants in their desire to affiliate with their group during the collaborative group game. However, deliberately ostracized participants did report a more negative attitude toward their group members than control participants, confirming *Hypothesis III (b)*. Interestingly, when three outliers were removed from the data set, deliberately ostracized participants reported investing significantly greater effort in the group game than control participants (*RQ V*), perhaps suggesting that deliberately ostracized participants were attempting to repair their threatened needs by either reaffiliating with the group or by reestablishing their sense of worth through a strong task performance.

Comparing Unintentional Ostracism to the Control Condition

Study 4 replicated the findings from Study 3 which showed that unintentionally ostracized participants reported less expectation that their basic needs would be fulfilled in the upcoming group task as compared to control participants (thereby partially supporting *Hypothesis II*). However, the mean difference in task-specific need fulfillment between groups was much smaller than in Study 3, and Study 4 only replicated the previously observed condition difference in overall self-reported basic need fulfillment once one outlier had been removed. Paralleling Study 3 findings, unintentionally ostracized participants did not report lower self-esteem than control participants, nor did they report a more negative attitude toward Participant 3 (*RQ III*).

Study 4 newly investigated participants' feelings of isolation and overall negative affect during the icebreaker and found that unintentionally ostracized participants reported feeling significantly more isolated from their group than control participants. While no differences in negative affect were observed when analyzing the full data set, unintentionally ostracized participants reported more negative affect than control participants after outliers were removed (*RQ II*). It is worth noting that a larger overall sample size would likely minimize the effect of these outliers on the observed outcomes, and therefore future studies with larger sample sizes may find significant condition differences in these variables without the removal of outliers. Given our smaller sample size, however, we felt that it was best practice to report the results both with and without outliers when the results notably differed from one another.

Comparing Deliberate Ostracism to Unintentional Ostracism

The most notable difference in outcomes between participants who were deliberately versus unintentionally ostracized was that deliberately ostracized participants reported significantly lower self-esteem and lower expectations that their basic psychological needs would be fulfilled during the group task (*RQ I*). *Hypothesis I* and *Hypothesis III (b)* were not supported, however, as there was no difference between ostracism conditions in participants' attitude toward their group members or how isolated/connected they felt during the icebreaker. There was also no observed difference between the ostracism conditions in how much general negative affect participants experienced (*RQ II*). These findings may suggest that some of the emotional consequences of deliberate and unintentional ostracism may be similarly severe, though caution should be used when interpreting these results since the unintentional ostracism condition also did not significantly vary from the control condition on some variables (i.e., attitude towards the group and feeling connected to the group).

Interestingly, we also observed that participants' individual levels of rejection sensitivity and loneliness showed different associations with the measured outcomes depending on the type of ostracism they experienced *(RQ VI & VII*). For example, participants' rejection sensitivity was clearly associated with reduced basic need fulfillment (across both subscales) in the deliberate ostracism condition but was only associated with reduced self-esteem in the unintentional ostracism condition. A reversed pattern was observed with loneliness. Greater feelings of loneliness were associated with worse psychological outcomes in the unintentional ostracism condition (e.g., feeling more negative affect, less positive affect, less fulfilled basic psychological needs, and investing less effort in a group task) but showed no association with outcomes in the

deliberate ostracism condition and was only associated with reduced self-esteem in the control condition. These findings suggest that purposeful exclusion may cause people to feel worse about themselves if they are already attuned to potential signs of rejection (notably, rejection sensitivity led to reduced needs even in the control condition where participants were *not* excluded). On the other hand, people who regularly feel lonely may be particularly vulnerable to suffering consequences from everyday experiences of unintentional ostracism.

Interpreting the Collective Evidence from Study 3 and Study 4

Although it is unclear why the differences in overall need fulfillment and task-specific need fulfillment were less pronounced in Study 4 as compared to Study 3, results may have been influenced by several contributing factors. First, the cell size per condition was smaller in Study 4 with an average of 59 participants per group as compared to an average of 79 participants per group in Study 3. Data collection for Study 4 was halted prior to attaining our target sample size due to practical limitations – we found that participant research sign-ups per academic quarter were greatly reduced after the university transitioned to an online-only format. Additionally, although we did not statistically identify any interaction effects caused by the transition of the research protocol to an online-only format in March of 2020, we think it is possible that participants were experiencing psychological effects from their anticipation of the pandemic prior to the official shelter-at-home orders given in March. To further explore our data, we looked more closely at the mean values for the basic needs scale across both studies (see Table 12). While there were no statistically significant differences when comparing Study 3 to Study 4, we noted that control participants in Study 4 reported a

higher baseline level of task-specific need fulfillment than control participants in Study 3. Though we can only speculate as to whether this non-significant pattern reflects any real differences in the participant sample from Study 3 versus Study 4, recent research from Graupmann and Pfundmair (2020) has found that people engaged in social distancing show reduced basic need fulfillment as compared to those who are not social distancing. It is therefore possible that participating in Study 4 during the context of social distancing and the COVID-19 pandemic may have uniquely affected participants' responses on the basic needs measure.

Table 12

Comparing the basic needs scale means from Study 3 and 4.

		Control			Unintentional			Deliberate
		Study 3 (*n* = 75)	Study 4 (*n* = 53)	Mean difference	Study 3 (*n* = 82)	Study 4 (*n* = 56)	Mean difference	Study 4 (*n* = 54)
ALL DATA								
Overall basic needs	M *(SD)*	3.78 *(0.48)*	3.68 *(0.64)*	0.10	3.42 *(0.64)*	3.40 *(0.80)*	0.02	2.90 *(0.76)*
Self-esteem	M *(SD)*	3.52 *(0.81)*	3.55 *(0.89)*	-0.03	3.34 (0.81)	3.44 (0.78)	-0.10	3.05 *(0.91)*
Task-specific needs	M *(SD)*	3.87 *(0.48)*	3.72 *(0.64)*	0.15	3.45 *(0.68)*	3.38 *(0.90)*	0.07	2.85 *(0.80)*

Note. When five outliers were removed from Study 3, the mean for self-esteem in the control condition was 3.66 (*SD* = 0.63). When one additional outlier was removed, the mean for task-specific need fulfillment in the Study 3 unintentional ostracism condition was 3.48 (SD = 0.64).

Limitations and Next Steps

In addition to the potential complications caused by the COVID-19 pandemic, the current study design was limited in several ways. First, we were unable to directly ask participations about how excluded they felt during the social interaction or how they perceived their ostracizers' intent to exclude (i.e., "How much did your group members

intend to exclude you during the icebreaker activity?"). Since the alleged goal of this research was to study how online teams collaborated, we did not want to include any questions that would lead participants to realize the real topic of the study was social exclusion. Therefore, while we constructed each condition scenario to represent a situation that we believed would likely be perceived by participants as either unintentional or deliberate, we cannot demonstrate with the current data whether participants perceived an actual difference in intent between conditions. To address this limitation, we ran a separate validation study (Study 5) where outside observers viewed an example of the chatboard interactions that occurred in Study 4 and reported their perceptions of the ostracizers' behaviors and intent to exclude.

A second important design limitation is that in order to encourage different perceptions of the ostracizers' intent between conditions, the deliberate and unintentional ostracism conditions did not present identical exclusion experiences. For example, participants saw an additional chatboard interaction between Participant 2 and Participant 3 in the deliberate condition, and this interaction was not present in the unintentional ostracism condition. Therefore, we cannot conclude with certainty whether the differences observed between conditions were due exclusively to differences in the ostracizers' perceived intent or whether another factor may have influenced our findings. In our next line of research, we plan to address this limitation by using a Cyberball paradigm where participants experience identical exclusion experiences and *only* the provided interpretation of the ostracizers' intent will vary between conditions.

Third, although the post-hoc sensitivity analysis indicated that our sample size was sufficiently powered to detect the effect sizes we found across most significant

comparisons we conducted, it was not sufficient to confirm the observed condition effects on the participants' attitude toward their group, their experience of negative affect, their feelings of connection, or their self-esteem after the icebreaker. These variables in particular should be further evaluated across future studies. Further research is also needed to better explore the behavioral and motivational responses to ostracizers after deliberate and unintentional ostracism. The current study included an initial measure of participants' approach motivations towards their group members; however, no significant condition differences were found. This may be due, in part, to the relatively short length of the measure (only five questions) and its current simplicity (the extracted factor explained only 28.10% of the total variance in the data). In future studies, we plan to further develop this measure to more thoroughly capture the construct of approach motivation and hope to develop items to capture additional motivational factors as well (such as the desire to show competence and the desire to punish group members). Finally, while this study contained an initial exploratory analysis of the association between the outcome variables and participants' rejection sensitivity and loneliness, the role of these individual-level variables merits its own line of research. In particular, future research should evaluate the implications of the initial link we found between people's self-reported loneliness levels and their greater vulnerability to the psychological effects of unintentional ostracism.

Study 5: Validating Perceived Intent in the Online Chatboard Paradigm

Following Study 4, a short validation study was conducted to evaluate whether the online chatboard paradigm successfully led participants to make different attributions of the ostracizers' intent across conditions. Manipulation check questions were not

included in Study 3 or 4 because we anticipated that adding such explicit questions would tip participants off to the real purpose of the study and make them suspicious of their group members (who were not, in fact, real participants). To circumvent these issues, we instead used a separate sample of participants who watched the screen-recorded chatboard interactions used in Study 4. These participants were asked to imagine how they would perceive the situation from the perspective of Participant 1 (i.e., the real participant).

Method

Participants

Three-hundred and fifty-seven participants were recruited from the Amazon Mechanical Turk website. Recruitment was limited to workers located in the United States, and only workers with a 90% HIT approval rating above were eligible for the study. Forty-one participants were removed from the data set because they failed the attention check questions or did not follow the study directions. The final sample therefore included 316 MTurk workers (177 male, M_{age} = 38.13, SD_{age} = 11.65) and was approximately 76% White, 10% Black, 7% Asian, 5% Hispanic/Latino, and 1% American Indian. Participants were paid $1.75 for participating and on average completed the study in 15 minutes. Almost all participants (99%) completed the study materials on their laptop.

Measures

Attention Check. To ensure that participants paid attention to the video, participants were asked to briefly summarize what happened in the video recording they watched. They were then asked, “Which of the following television shows was *not*

mentioned in the video?" Answer options included SpongeBob SquarePants, Paige's Pages, and Pokémon. If participants failed the attention check question (by selecting anything other than Pokémon), their data was not included in the analysis.

Valence of the Group Interaction. Participants were asked to answer the remaining questions from the perspective of Participant 1 in the video they watched. From Participant 1's perspective, they were asked, "Overall, how negative or positive were your interactions with your group members in the video you watched?" (-3 = very negative; +3 = very positive).

Inclusion of Other in the Self. As an indicator of the perceived closeness between Participant 1 and their other two group members, participants were asked to indicate which pair of circles best represented Participant 1's association with their group members. The seven answer options included images of two circles (respectively labeled "You (Participant 1)" and "Your group members") that overlapped to increasing degrees. Circles that overlapped to a greater degree corresponded with higher response values and indicated greater relational closeness between the two entities (Aron, Aron, & Smollan, 1992).

Perceptions of the Ostracizers. Participants were asked to respond to 12 items (developed for this study) that included statements about their group members' intent to exclude Participant 1 (e.g., "My group members intended to leave me out of the group interactions"), the amount of attention Participant 1 received from their group members (e.g., "My group members paid attention to me during the icebreaker activity"), and the group members' awareness of the effects of their behavior (e.g., "My group members

were aware of how their actions during the icebreaker activity affected me"). The five-point response scale ranged from "not at all" to "very much."

We conducted an exploratory factor analysis using principal axis factoring to determine the factor structure for these 12 items. All indices (Bartlett's test, overall KMO, MSA statistics) indicated that the data was factorable. Two factors (with Eigenvalues above 1) were retained and explained a cumulative 57% of the variance. Three items loaded above .40 on both factors, and these items were assigned to the factor where they seemed to fit best conceptually (see Table 13). We interpreted the first factor as representing the team members' inclusive behavior toward Participant 1 (seven items) and the second factor as representing the team members' inclusive intentions toward Participant 1 (five items). The inclusive behavior subscale demonstrated excellent reliability ($\alpha = .90$), with significant inter-item correlations ($p < .001$) that ranged from .30 to .88. The inclusive intentions subscale demonstrated acceptable reliability ($\alpha = .74$). All but one inter-item correlation was significant ($p < .001$), and the correlations ranged from .09 to .73. Items in each subscale were therefore averaged together to create overall subscale scores.

Table 13

Exploratory factor analysis pattern matrix loadings for perception of ostracizers' items.

	Assigned Factor	Factor	
		I	II
Item			
My group members ignored me during the icebreaker activity. (R)	I	**0.86**	-0.02
My group members acted as though I was invisible during the icebreaker activity. (R)	I	**0.79**	0.06
My group members wanted me to be part of the group.	I	**0.78**	-0.01
My group members paid attention to me during the icebreaker activity.	I	**0.75**	-0.35
My group members intended to leave me out of the group interactions. (R)	I	**0.72**	0.36
My group members intentionally paid more attention to each other than to me during the group activity. (R)	I	**0.71**	0.02
My group members made an effort to connect with me during the icebreaker.	I	**0.67**	**-0.42**
My group members were aware they were leaving me out of the group interactions. (R)	II	**0.58**	**0.47**
My group members probably didn't realize their interactions made me feel disconnected from the group.	II	-0.00	**0.78**
My group members didn't know that I felt left out of the group interactions.	II	-0.03	**0.73**
My group members were aware of how their actions during the icebreaker activity affected me. (R)	II	-0.19	**0.57**
My group members didn't mean to make me feel left out of the group.	II	0.39	**0.44**
Factor correlation			
I		4.43 (37.60%)	
II		-0.00	1.92 (19.20%)

Note. Boldface indicates factor loadings > .40. Factor Eigenvalues and percent of variance explained by the factor are depicted on the diagonal. The correlation between the two factors is shown below the diagonal. Principal axis factoring with direct oblimin rotation was used. The overall KMO value was 0.83. All factors with an Eigenvalue above 1 were retained.

Relational Certainty. Participants were asked to respond to three exploratory items that represented how certain they were of the nature of their relationship with their team members (e.g., "I can tell what type of people my team members are," "It's clear how my team members perceive me," and "I have a sense for how my team members feel about me"). Responses ranged from 1 ("not at all") to 5 ("very much"). An exploratory

factor analysis using principal axis factoring indicated that the items loaded on to a single factor that explained 72.30% of the total variance (see Appendix E), so items were factored together into an average score for analysis. The scale demonstrated good reliability with a Cronbach's alpha of .87. All inter-item correlations were significant ($p <$ .001), with coefficients ranging from .57 to .90.

Procedure

Participants signed up for the study through the Amazon Mechanical Turk platform and completed the study materials online. First, participants were asked to imagine that they had come to a university lab room to complete a research study about how online groups collaborate remotely. They were told that in this imagined scenario, they would be communicating with the researcher and their two assigned group members over an online chatboard, and their first activity would be an icebreaker where they would be asked to record an introductory video of themselves. Participants were told that they would not actually engage in these activities themselves; rather, they would watch a screen-recorded video of three other participants interacting and would be asked to imagine the experience from the perspective of Participant 1. Participants were randomly assigned by Qualtrics to watch either the deliberate ostracism, unintentional ostracism, or control condition screen-recording from the protocol used in Study 4. Next, they completed the attention check questions (2 items), valence question (1 item), inclusion of other in the self scale (1 item), perception of the ostracizer scale (12 items), relational certainty scale (3 items), and demographic questions (4 items).

Results of Study 5

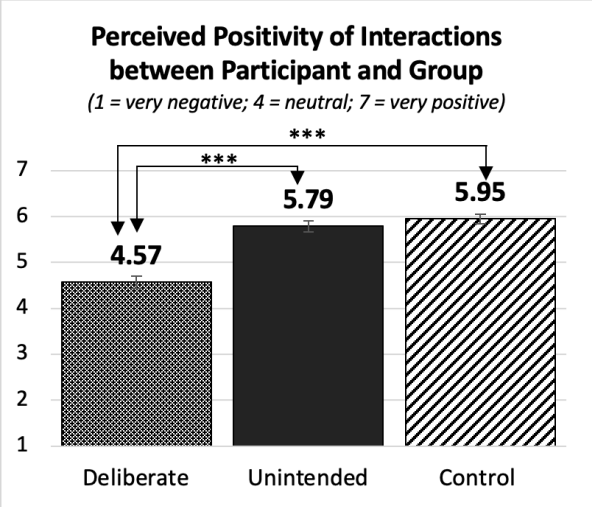
A post-hoc sensitivity analysis was conducted in the *G*Power* program with alpha (α) set to 0.05 and power (1 – β) set to .80. The analysis indicated that with the given sample size of 316 participants across three groups, the minimum detectable effect size (MDES) that a one-way ANOVA would be able to identify was an *f* value of 0.18 or, alternatively, an η^2 value of .03.

Valence of the Group Interaction (7-pt scale)

A one-way between-subjects ANOVA indicated that there was a significant difference between conditions in how positive the group interaction was perceived to be, *Welch's* $F(2, 207.21) = 33.82$, $p < .001$, *est.* $\omega^2 = .17$, $\eta^2 = .20$ (large effect, exceeds MDES). A Games-Howell post-hoc analysis indicated that there was no significant difference between the perceived valence of the group interaction between the control ($n = 100$; $M = 5.95$, $SD = 1.01$) and unintentional ostracism ($n = 103$; $M = 5.79$, $SD = 1.18$) conditions (see Figure 22). However, group interactions in the deliberate ostracism condition ($n = 113$; M = 4.57, SD = 1.51) were perceived to be significantly more negative than interactions in either the control or unintentional ostracism conditions ($p < .001$).

Figure 22

Observer Ratings: Perceived Positivity of Interactions Between Participant and Group



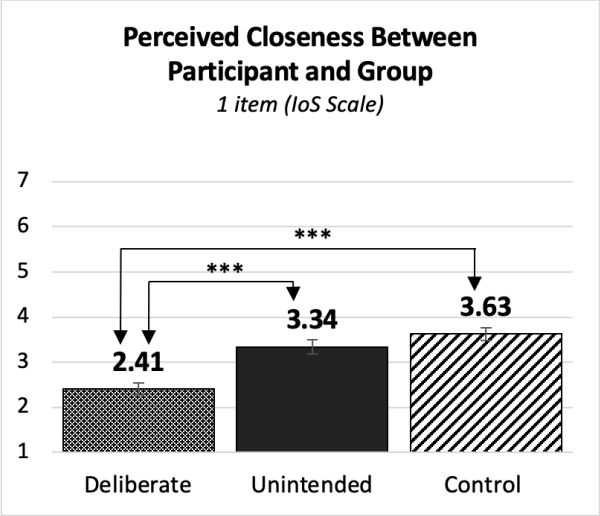
Note. $p < .05$*; $p < .01$**; $p < .001$***

Inclusion of Other in the Self (7-pt scale)

Results of a one-way ANOVA indicated that there was a statistically significant difference between conditions in the perceived relational closeness of Participant 1 to the other group members, $F(2, 313) = 20.69$, $p < .001$, $\eta^2 = .12$ (medium effect, exceeds MDES). A post-hoc Tukey HSD test again demonstrated that there was no significant difference between the perceived closeness reported in the control ($M = 3.63$, $SD = 1.38$) versus unintentional ostracism conditions ($M = 3.34$, $SD = 1.58$). However, Participant 1 in the deliberate ostracism condition ($M = 2.41$, $SD = 1.42$) was perceived to be significantly more distant ($p < .001$) from their group members than in either the control or unintentional ostracism conditions (see Figure 23).

Figure 23

Observer Ratings: Perceived Closeness Between Participant and Group



Note. $p < .05$*; $p < .01$**; $p < .001$***

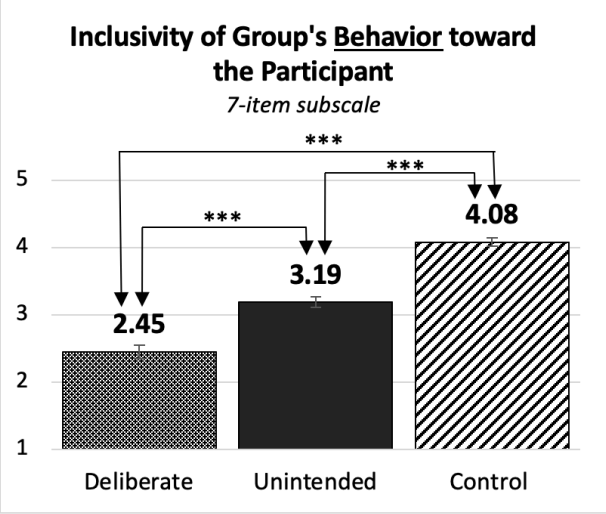
Perceptions of the Ostracizers (5-pt scale)

A MANOVA was conducted to determine whether there were condition differences in how much the ostracizers included Participant 1 (i.e., inclusive behaviors) and how much the ostracizers intended to include Participant 1 (i.e., inclusive intentions) during the group icebreaker activity (see Figures 24 and 25). Results indicated that there were statistically significant condition differences, $F(4, 624) = 59.97$, $p < .001$; Wilk's $\Lambda = 0.52$, $\eta^2 = .28$ (large effect, exceeds MDES). Group members were perceived to engage in more inclusive behaviors towards Participant 1 in the control condition ($M = 4.08$, $SD = 0.58$), followed by the unintentional ostracism condition ($M = 3.19$, $SD = 0.81$), and then the deliberate ostracism condition ($M = 2.45$, $SD = 1.01$), *Welch's* $F(2, 202.57) = 117.29$, $p < .001$, *est.* $\omega^2 = .42$, $\eta^2 = .39$ (large effect, exceeds MDES). A post-hoc Games-Howell test indicated that each of these group differences was statistically significant from the others at an alpha level of $p < .001$. Group members were also perceived to have more inclusive intentions toward the participant in the unintentional ostracism condition

(M = 4.05, SD = 0.79), followed by the deliberate ostracism condition (M = 3.50, SD = 1.05) and the control condition (M = 3.32, SD = 0.82), *Welch's* $F(2, 208.07) = 22.01$, $p < .001$, *est.* $\omega^2 = .12$, $\eta^2 = .10$ (medium effect, exceeds MDES). The post-hoc Games-Howell test indicated that the difference between the unintentional ostracism and deliberate ostracism condition was statistically significant at an alpha level of $p < .001$. The control condition was included in the MANOVA analysis in order to compare differences in inclusion behaviors; however, the inclusion intention items were designed specifically for the ostracism conditions and, therefore, comparisons to the control condition were not considered relevant for this subscale.

Figure 24

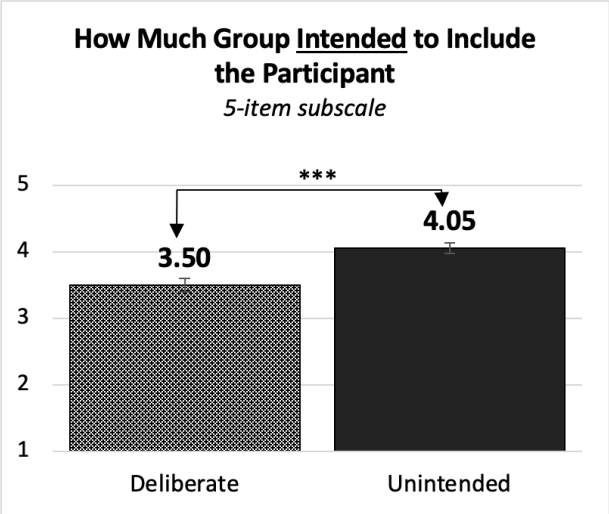
Observer Ratings: Perceived Inclusivity of Group's Behavior Toward Participant



Note. $p < .05$*; $p < .01$**; $p < .001$***

Figure 25

Observer Ratings: Perceived Inclusivity of Group's Intentions Toward Participant



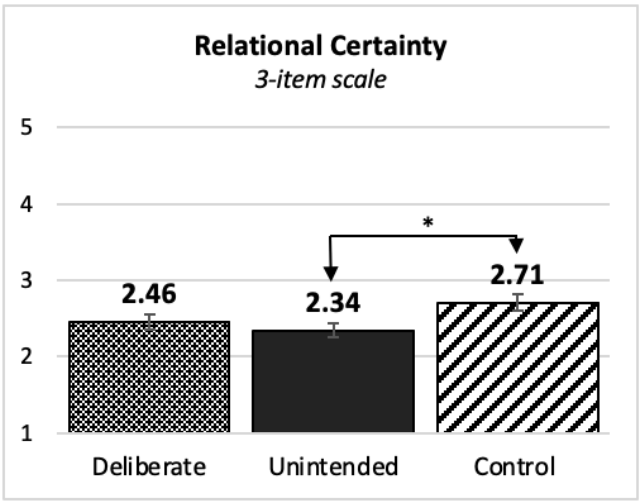
Note. $p < .05$*; $p < .01$**; $p < .001$***

Relational Certainty (5-pt scale)

Results of a one-way ANOVA indicated that there were condition differences in how certain observers were of their imagined relationship with their group members, *Welch's* $F(2, 205.67) = 3.21$, $p = .021$, *est.* $\omega^2 = .014$, $\eta^2 = .02$ (small effect). A post-hoc Games-Howell test indicated that observers in the control condition ($M = 2.71$, $SD = 1.14$) were significantly more certain ($p = .032$) of the nature of the relationship between Participant 1 and their group members than observers in the unintentional ostracism condition ($M = 2.34$, $SD = 0.95$). Observers' degree of relational certainty in the deliberate ostracism condition ($M = 2.46$, $SD = 1.03$) did not significantly differ when compared to the other conditions (see Figure 26).

Figure 26

Observer Ratings: Relational Certainty between Participant and Group



Note. $p < .05$*; $p < .01$**; $p < .001$***

Discussion of Study 5

Study 5 was designed to evaluate whether the immersive social scenarios used in Study 4 successfully manipulated participants' perceptions of their group members *intent* to ostracize them. Although Study 5 relied on ratings provided by external observers who were asked to imagine that they were participating in the social scenario, it nevertheless provided strong evidence that both the group members' intentions *and* actual behavior toward Participant 1 were perceived to be less inclusive in the deliberate ostracism condition than the unintentional ostracism condition. Furthermore, group members were perceived by observers to be behaviorally less inclusive towards Participant 1 in the unintentional ostracism condition versus the control condition. These findings suggest that our new immersive paradigm successfully created distinct social exclusion experiences where ostracism was perceived to be either more or less intentional.

Interestingly, while observers reported that Participant 1 was less included in the group interaction in the unintentional ostracism condition as compared to the control

condition, they also believed that across both conditions *(1)* Participant 1's relationship with the group was equally close, and *(2)* Participant 1's icebreaker interaction with their group members had been equally positive. It was only when observing the deliberate ostracism condition that observers reported feeling that Participant 1 had experienced a more negative and more distant interaction with their group members. One interpretation of these results is that observers may underestimate the psychological effects of unintentional ostracism when they are not experiencing the moment themselves. While observers acknowledged that the group members were objectively less inclusive of Participant 1 in the unintentional ostracism condition, they did not perceive this lack of inclusion to be necessarily more negative or indicative of relational distance between Participant 1 and the rest of the group. And yet, in Studies 3 and 4, our evidence suggested that unintentionally ostracized participants did suffer psychological consequences, including greater feelings of isolation and reduced expectations of basic need fulfillment. This finding may have implications for understanding when and why observers might choose to step in and include someone who is being ostracized by others in a group setting.

Finally, as an exploratory research question, we asked participants how certain they felt of their relationship with their group members in each condition. Interestingly, participants in the unintentional ostracism condition felt significantly less certain (compared to the control condition) of what type of people their group members were or what their group members thought of them. While participants believed the group was behaving exclusively in this condition, they seemed to be unsure of how to interpret the event or what its implications might be for future social interactions with the same group

members. Future research should consider exploring ambiguity and uncertainty as a direct predictor of people's attitudes and behavior toward their ostracizers. Although the current research attempted to dichotomize the interactions into clearly deliberate versus clearly unintentional ostracism, in everyday social interactions, perceived intent can be ambiguous to varying degrees. Being 90 percent certain someone intends to ignore a person is arguably a different psychological experience than being 70 percent sure – and both are likely to lead to different outcomes than 20 percent certainty in someone's intentions. As people grow incrementally more certain of the nature of their relationship with their ostracizers (i.e., "This person doesn't want to be around me"), additional research is needed to document any corresponding changes in people's attitudes and behavior towards their ostracizers.

Limitations and Next Steps

Study 5 was limited in design by its use of observers rather than participants who were immersed in the social scenario themselves. Due to practical considerations, we were unable to collect this data as part of the Study 4 protocol and did not have sufficient participant resources to run a separate immersive validation study. It is possible that asking participants to imagine being in a social scenario changed their interpretations of the situation as they were more emotionally removed from the interaction. Our confidence in the above findings could be further strengthened by replicating the study using the immersive paradigm, though the results we collected using observers do provide initial support of our predictions. Furthermore, the post-hoc sensitivity analyses indicated that our sample size was sufficient to detect the effect sizes we found when comparing observers' evaluations of the icebreaker's valence, the closeness of Participant

1 to their group members, the group members' inclusive intentions, and the group members' inclusive behaviors; however, the design was underpowered to detect the significant effects we observed when comparing the observers' perceptions of relational certainty between conditions. As mentioned above, future research should consider building upon the current line of work by further investigating the specific role of relational certainty in determining people's psychological and behavioral response to ostracism. Lastly, research is needed to explore in more depth how third-party observers perceive situations of unintentional ostracism versus other types of ostracism and should identify factors that might encourage or discourage observers from including someone who has been unintentionally excluded.

General Discussion

Previous literature has well-documented the negative psychological effects of seemingly deliberate ostracism through experimental paradigms like Cyberball (Buelow et al., 2015; Williams et al., 2000). We also know that even ostensibly innocuous behaviors (e.g., checking one's phone during a conversation, diverting one's gaze, using gender-exclusive language) can make others feel socially excluded (David & Roberts, 2017; Hales et al., 2018; Stout & Dasgupta, 2011; Wesselmann et al., 2012). Yet, little research directly compares how the psychological effects of ostracism differ when social exclusion is perceived to be accidental versus purposeful. In this paper, we proposed that everyday experiences of social exclusion are often much more ambiguous than they are in the laboratory. One of our first responses to being excluded may therefore involve determining how likely it is that the behavior we experienced was an oversight versus a deliberate attempt to leave us out. Whereas research has investigated how certain

cognitive appraisals (e.g., “Why was I excluded?”) affect the psychological consequences of exclusion, the importance of the ostracizer’s perceived intent to exclude remains relatively unexplored.

One commonly cited consequence of social exclusion is that it threatens our sense of self by demonstrating that others do not perceive us as valuable interaction partners. This social feedback is then integrated into how we view ourselves. After being ostracized, for example, people feel they have less control over their personal outcomes, a less meaningful existence, less social belonging, and a lower sense of self-esteem than those who were included (Williams et al., 2000). How others view us therefore matters in determining how we view ourselves. But what conclusions should we make about ourselves when we are unintentionally left out rather than deliberately excluded? Does exclusion threaten our sense of self in the same way, regardless of perceived intent? Or might unintentional exclusion be uniquely threatening under certain contexts? The current research addresses this gap in the literature by investigating when and how perceived differences in the ostracizers’ intention to exclude affect people’s sense of self and their subsequent thoughts, feelings and behaviors. In a series of five studies, we explored first how experiences of deliberate versus unintentional exclusion varied based on participants’ written recollection of an exclusion event (*Study 1 & 2*). We then designed a new immersive social paradigm to evaluate how participants responded in the moment to either deliberate or unintentional ostracism (*Study 3, 4, & 5*). The following section summarizes and interprets the collective evidence for our project’s hypotheses and research questions.

Evaluating the Hypotheses and Research Questions

Hypothesis I: Compared to the control and unintentional ostracism conditions, we predicted that participants who were excluded deliberately would report greater feelings of exclusion (Study 1, 2, & 4).

The recall paradigm studies *(Study 1 & 2)* clearly demonstrated that people who were left out deliberately felt more excluded than those who were unintentionally left out; in contrast, participants in the immersive chatboard paradigm *(Study 4)* reported feeling similarly isolated or connected to their group regardless of their ostracism condition (though both reported more isolation than control participants). Notably, while participants in Studies 1 and 2 responded to a full scale of items that asked about feelings of exclusion, participants in Study 4 responded only to two single items about how connected or isolated they felt during the icebreaker (in order to preserve the pretense that the research was about group collaboration and not social exclusion). Regardless of whether deliberately and unintentionally ostracized participants *felt* equally excluded in Study 4, Study 5 confirmed that from an observer perspective, group members were least inclusive of participants in the deliberate ostracism condition, followed by the unintentional ostracism condition, and then the control condition. Interestingly, a qualitative analysis of the participant recollections in Study 1 found that narratives in the unintentional ostracism condition were actually more likely to explicitly mention feelings of exclusion (i.e., feeling disconnected, unwanted, unimportant) than narratives in the deliberate ostracism condition, though this finding contradicted the quantitative self-reports from participants in both Study 1 and Study 2. Our combined findings confirm that people are highly sensitive to cues of social exclusion. Additionally, accidental

actions had consequences, as even when no ill-will was inferred, people still felt socially isolated when they were left out of group interactions.

Hypothesis II: We predicted that participants experiencing either type of ostracism would report lower overall fulfillment of their basic psychological needs than participants in the control condition (Studies 3 & 4).

Evidence for *Hypothesis II* was mixed. We analyzed need fulfillment using the overall scale mean first and then separately analyzed the two subscales. The self-esteem subscale consisted of global evaluations of the self (e.g., "I feel good about myself"), and the task-specific subscale asked participants how much they expected to experience a sense of control, meaning, and social belonging in the upcoming collaborative group task (e.g., "I feel like I will have control over the course of the upcoming group tasks"). In Study 3, we observed that unintentionally ostracized participants reported significantly less overall basic need fulfillment and less task-specific need fulfillment than control participants. While the difference in self-esteem was non-significant in analyses of the full data set, when a small number of outliers were removed from the data, ostracized participants reported experiencing significantly lower ($p < .01$) overall self-esteem than control participants. In Study 4 (using the same paradigm and a similar participant sample), we observed the same pattern of results as Study 3 for task-specific need fulfillment but found significant differences in the overall mean for basic need fulfillment only once one outlier was removed and did not find any differences in the self-esteem subscale. Study 4 did show that deliberately ostracized participants experienced lower overall satisfaction of their basic needs (as well as less satisfaction on both subscales) than did control participants.

Although it is unclear why the difference in need fulfillment between the control and unintentional ostracism conditions was more extreme in Study 3 as compared to Study 4, potential interpretations are discussed in-depth in the discussion section for Study 4. Study 3, for example, had a higher sample size per cell than did Study 4 (an average of 79 participants per group as compared to 59), which may have reduced the power of Study 4 analyses. Additionally, Study 4 was conducted throughout 2020 and midway through data collection, the study transitioned to an online-only format when the coronavirus pandemic led to social distancing guidelines. Although we did not statistically identify any interaction effects caused by the transition in format, other research has found that social distancing reduces people's self-reported basic need fulfillment (Graupmann & Pfundmair, 2020). We therefore speculated that participating in Study 4 during the context of social distancing and the COVID-19 pandemic may have uniquely affected participants' responses to the basic psychological needs measure.

RQ I: How did the participants' (a) overall satisfaction of their basic psychological needs, (b) satisfaction of belonging needs, and (c) satisfaction of meaning in life needs compare between the deliberate and unintentional ostracism conditions? (Study 1, 2, & 4)

In both the recall paradigm studies and the immersive chatboard paradigm, deliberately excluded participants reported less satisfaction of their basic psychological needs than unintentionally ostracized participants. We were unable to evaluate how participants varied in their specific satisfaction of belonging and meaning in life needs, as the presence of these subscales was not supported by the factor analyses conducted in any of the four studies that used the basic needs scale. Instead, we found that factor analyses

supported either a single-concept structure (containing one factor with positively-worded items and a second factor with reverse-coded, negatively-worded items) or a two-factor structure divided into general self-esteem items and task-specific need fulfillment items. In Study 4, deliberately ostracized participants reported both lower self-esteem and lower task-specific need fulfillment than did unintentionally ostracized participants. Overall, our results indicate that deliberate exclusion poses a greater threat to our sense of self than does unintentional exclusion. This finding also suggests that the ostracizer's perceived intent may be fundamental in defining our holistic interpretation of the exclusion event—the information we glean about how others view us seems to be much more damaging under conditions of deliberate exclusion versus unintentional exclusion.

RQ II. (a) How did participant affect vary between deliberate and unintentional ostracism conditions? (Study 1 & 2) (b) How did it vary between deliberate ostracism, unintentional ostracism, and control conditions? (Study 4)

We again found different patterns for negative affect depending on the paradigm used. In the recall paradigm studies, deliberately excluded participants reported more negative affect than unintentionally excluded participants. However, in the immersive chatboard paradigm, deliberately and unintentionally ostracized participants reported similar levels of negative affect (though deliberately ostracized participants experienced more negative affect than control participants). Given the previously stated differences between the paradigms, these findings are unsurprising. In the recall paradigm, deliberately excluded participants often recalled events that redefined their existing social relationships; for example, someone they had been friends with since childhood permanently stopped communicating with them. We expect that the frequent closeness of

the relationship between the narrator and the ostracizer heightened the emotional response to ostracism, as reflected in the much higher overall mean values reported for negative affect in Studies 1 and 2 versus Study 4.

One potential take-away from the nonsignificant laboratory findings is that experiences of minor ostracism at the hands of strangers may sometimes feel equally unpleasant, regardless of perceived intent. While this interpretation is undermined by the fact that negative affect in the unintentional ostracism condition did not significantly differ from the control condition, we did find that when outliers were removed, unintentionally ostracized participants reported more negative affect than control participants. Additional research using a larger sample should continue testing for potential condition differences in negative affect after immersive exclusion experiences.

Hypothesis III: Compared to the control and unintentional ostracism conditions, we predicted that participants who were deliberately excluded would report (a) less desire to affiliate with group members (Study 1, 2, 4) and (b) a more negative attitude toward their group members (Study 4).

In the recall paradigm studies, participants reported interacting less with their ostracizers when deliberately excluded versus unintentionally excluded. Items on the subscale suggested that deliberately excluded participants experienced more conflict in their relationship with their ostracizers and were more likely to reduce contact or end the relationship afterwards. However, the qualitative analysis of participant recollections did not find a significant difference in how often narratives from either condition mentioned engaging in approach or withdrawal behaviors. In Study 4, deliberately excluded participants did report a significantly more negative attitude toward their group members

compared to control participants (though not unintentionally ostracized participants) but did not show any differences in their desire to affiliate with their group. Given these conflicting findings between the two paradigms (and our knowledge that ostracism has been linked to withdrawal behavior in previous research), it is possible that either *(1)* our experimental manipulation of ostracism in the laboratory was not strong enough to affect approach motivations during a short group interaction, or *(2)* our measure of approach motivation used in Study 4 did not adequately capture the intended construct. We can assume that the events described in Study 1 and Study 2 were impactful enough that participants were able to recall and describe them in depth (often months or years after they occurred)—these types of events are no doubt qualitatively different than the ostracism event we created in the lab. However, because the recall paradigm asks participants to reflect on real life experiences, it benefits from high external validity. We can therefore conclude that in the real world at least, social exclusion of either type often damages the relationship between the victim and the ostracizer, though relational consequences are more severe when exclusion is deliberate. Further research is needed to determine whether alternative measures for approach motivation would reveal similar patterns of behavior during lab interactions with strangers as what we observed in people's lived experiences.

RQ III. How did control participants compare to unintentionally ostracized participants in their attitude toward their group members? (Study 3 & 4)

In both Study 3 and Study 4, unintentionally ostracized participants did not report a more negative attitude toward their group members as compared to control participants. Interestingly, Study 2 showed that people who were unintentionally excluded were more

likely to believe that no one was to blame for their exclusion; whereas those who were deliberately excluded were more likely to blame others for their exclusion. It is possible that unintentionally ostracized participants in Study 3 and Study 4 made comparable allocations of blame as those in Study 2, which may have allowed them to retain a similarly positive view of their group members as control participants. However, as noted earlier, the difference between participants' attitudes toward their group members in Study 4 did not significantly vary between ostracism conditions either.

RQ IV & V. How did control participants compare to unintentionally ostracized participants in their desire to affiliate with their group members? How did they compare in their effort on a collaborative group task? (Study 4)

In the immersive chatboard paradigm, there were no significant condition differences in participants' desire to affiliate with their group members, their behaviorally observed effort on a group task, or their self-reported effort on a group task. However, when three outliers were removed from the data set, deliberately ostracized participants reported investing significantly greater effort in the group game than control participants, which may indicate that deliberate ostracism motivated participants to restore their threatened needs either by reaffiliating with the group or by reestablishing their sense of worth by performing well on the task.

RQ VI & RQ VII. What, if any, association exists between individual-level rejection sensitivity and participant outcomes after experiencing either deliberate or unintentional ostracism? (Study 2 & 4) What, if any, association exists between general loneliness and participant outcomes after experiencing either deliberate or unintentional ostracism? (Study 2 & 4)

Across both the recall paradigm used in Study 2 and the immersive social paradigm used in Study 4, participants' individual levels of rejection sensitivity and general loneliness were found to be significantly associated with multiple negative outcomes. Despite previous research suggesting that rejection sensitivity may motivate greater affiliative behavior (Renström et al., 2020), we did not observe this association in the current research – which could imply that rejection sensitivity impacts only approach motivations toward new interaction partners and not toward one's ostracizers. For both studies, rejection sensitivity was negatively correlated with need fulfillment across each condition (including the control condition in Study 4). The recall paradigm study also found that as participants' general level of rejection sensitivity increased, their negative affect, feelings of exclusion, and perception of the event's emotional impact (both in the moment and over time) increased after exclusion of either type – and, in the deliberate exclusion condition only, more sensitive participants also blamed themselves more for the exclusion and felt that the exclusion had been a more negative event. These findings suggest that being overly attuned to potential signs of rejection may be related to people feeling worse about themselves in general – whether they have been deliberately excluded, unintentionally excluded, or have not been excluded at all.

In contrast, the evidence from the immersive chatboard study suggests loneliness in particular may make people more vulnerable to the psychological consequences of everyday, unintentional ostracism. In the immersive chatboard paradigm, loneliness was associated with feeling more negative affect, less positive affect, experiencing reduced basic need fulfillment, and reporting less effort on the group task after unintentional ostracism. Notably, loneliness was *not* associated with outcomes in the deliberate

ostracism conditions and was only associated with reduced self-esteem in the control condition. In the recall paradigm study, loneliness was associated across both exclusion conditions with feeling more negative affect after exclusion, feeling that the exclusion had greater impact over time, and experiencing reduced need fulfillment. We noted previously that the unintentional exclusion experiences described in the recall paradigm likely reflected more meaningful interactions than what participants experienced in the chatboard paradigm. Therefore, this pattern of findings may suggest that when exclusion events are highly impactful, greater loneliness is a risk factor for worse outcomes regardless of perceived intent. However, specifically during mundane experiences of ostracism (such as failing to be acknowledged by two strangers one has just met), loneliness heightens the perceived severity of an ambiguous social threat and creates a more distressing experience.

Evaluating the Proposed Models

The cumulative findings across our five studies clearly confirm previously established conclusions on the psychological and relational consequences of deliberate ostracism. Deliberate ostracism seemed to generate the greatest threat to people's sense of self (measured through the basic psychological needs scale), as participants in this condition consistently reported the least satisfied needs across all four studies. Our remaining question was whether the relationship between the unintentional ostracism condition and control condition better matched a model of *incremental growth* or *resolved threat*. We had hypothesized that in a model of *incremental growth*, negative outcomes would grow worse from the control condition, to the unintentional exclusion condition, to the deliberate exclusion condition. Alternatively, in a model of *resolved*

threat, the control condition and unintentional ostracism condition might show similarly positive outcomes because interpreting the exclusion as unintentional would alleviate its psychological consequences; in contrast, threat in the deliberate exclusion condition would remain unresolved and lead to negative outcomes.

Analysis of our primary dependent variable (i.e., the satisfaction of basic psychological needs) indicated partial support for both models: the task-specific need fulfillment subscale followed a pattern of *incremental growth* (unintentionally ostracized participants reported less task-specific need fulfillment than the control participants), whereas the self-esteem subscale resembled a pattern of *resolved threat* (there was no significant difference between self-esteem reported in the unintentional ostracism condition versus the control condition). Notably, in Study 3, the difference in self-esteem between conditions did become significant after a small number of outliers were removed; therefore, it is possible that future studies with larger sample sizes may find evidence that unintentional ostracism also reduces self-esteem. Within the current data, however, it seems that participants did not internalize a minor event of unintentional ostracism as a threat to their global sense of self-esteem (i.e., "this event does not reflect my value as a person") but did interpret it as a potential indication of how their group members would continue to behave in upcoming group interactions (i.e., "if they overlooked me during the icebreaker activity, they will probably overlook me again during the collaborative group task"). In contrast, when participants could not interpret the exclusive behavior as accidental, the social interaction became highly threatening to their global sense of self-esteem, in addition to reducing their expectations for fulfilling group interactions in the future.

In the immersive paradigm studies, the mean values we observed in the unintentional ostracism condition across the remaining dependent variables often did not significantly differ from the values observed in either the control condition or the deliberate ostracism condition. This made it difficult to determine whether our other measured outcomes better represented the *incremental growth* or *resolved threat* model. We had also hypothesized that some variables could follow a model of *overcompensation*, where those unintentionally ostracized were predicted to demonstrate the highest efforts at affiliation in an effort to avoid future exclusion. However, the current research was unable to evaluate a model of *overcompensation*, as we observed no significant condition differences at all in either effort or affiliative motivations within the immersive paradigm. We did, however, observe that across every dependent variable (with the exception of self-blame in Study 2 and approach motivations / effort during the group task in Study 4), mean values across conditions fell in the pattern predicted by the *incremental growth* model. In other words, for positive outcomes (such as satisfaction of basic needs, feelings of connection, and positive attitudes toward the group) deliberately excluded participants always reported the lowest mean value, unintentionally excluded participants reported a middle value, and control participants reported the highest value. Similarly, for negative outcomes (such as feelings of exclusion and negative affect), deliberately excluded participants always reported the highest mean value, followed by unintentionally excluded participants and then control participants. As the mean differences described were often statistically nonsignificant, interpretability in terms of model fit is limited; however, the consistent similarity in the pattern of means across multiple variables and studies seems promising.

What We Have Learned About Unintentional Exclusion

The current research provides valuable information about the nature of unintentional social exclusion within both immersive laboratory settings as well as real-world contexts. Our overarching purpose in conducting this research was to delineate the role of perceived intent in determining when and how people perceive social exclusion as a threat to the self. First, the combined research overwhelmingly suggests that perceived intent certainly impacts the subjective experience of exclusion, as demonstrated by our finding that deliberate exclusion consistently led to worse psychological and relational outcomes across all studies. Although previous research has documented similar findings within information exclusion paradigms, this research is among the first to demonstrate the importance of perceived intent across broader social exclusion contexts. Considering how infrequently perceptions of intent are discussed within social exclusion research, the current findings indicate that it certainly merits greater attention.

What might explain the fact that deliberate exclusion hurts more than unintentional exclusion? We offer two possible explanations. First, Geller et al. (1974) has proposed that we react negatively to exclusion because it takes us by surprise and contradicts our expectations for a fulfilling social interaction. If we expect social inclusion as the normative interaction, then accidental exclusion (due to oversight or misunderstanding) is much less shocking than deliberate exclusion – it is, at least, closer to the social norm we expect because others *intended* to include us, even if their actions failed to deliver upon our expectations. Secondly, our determination of intent may serve as a lens that shapes our understanding of how others see us. We previously discussed that many real-life experiences of ostracism (e.g., not receiving an invitation to a party)

are highly ambiguous and contain many possible interpretations (e.g., “they didn’t want me to be there;” “they forgot to invite me;” “they didn’t think I’d want to come”). If social exclusion is painful because it reveals how others view us, then what unique self-images are reflected by deliberate exclusion versus unintentional exclusion? One message that deliberate exclusion likely communicates is that others do not want to be around us (i.e., we are not a person who is likable or valuable). Given our current findings, this message seems to be more painful and causes more harm to our self-view than the alternative message that we are someone who is either easily misunderstood or easily forgotten about. Yet, despite the greater impact we have observed with deliberate exclusion, it seems evident that both messages threaten our sense of self to some extent. Being socially overlooked (even accidentally) generated significant feelings of isolation across all studies and, in Study 4, it led participants to expect that their basic psychological needs would be less fulfilled during an also upcoming group interaction (as compared to control participants). In the paradigm with the highest external validity (i.e., the recall paradigm), unintentionally excluded participants also reported quite high levels of negative affect (above the scale midpoint) and quite low levels of need fulfillment (below the scale midpoint). From these cumulative findings, we conclude that even accidental exclusion has real psychological consequences. Understanding the unique impact of unintentional exclusion remains particularly important given our knowledge that the average person probably experiences ostracism on a weekly (if not daily) basis and, more significantly, ostracism often happens in the absence of any instrumental motives (Nezlek et al., 2012; Lindström & Tobler, 2018).

We remain curious about whether there are any instances in which unintentional exclusion might result in worse outcomes than deliberate exclusion. For example, we hypothesized that in some instances, it may be more painful to have one's entire existence overlooked as compared to being outright rejected – direct rejection, at least, is an acknowledgement of personhood. However, as the current paradigm was designed to create a very minor experience of unintentional ostracism (which was not expected to trigger such existential threat), it was ill-suited to test for potential extreme reactions. In this context, participants likely still had the hope that they would be able to socially connect with team members during future activities and may have minimized the significance of the behavior because their group members were strangers rather than important interaction partners. Unexpectedly, during these minor experiences of ostracism where intent was designed to be ambiguous, we found that lonely people had a more negative emotional response than did people who were less lonely. Whereas people responded similarly to the clearer social threat of deliberate ostracism (regardless of loneliness levels), the finding that lonely people reacted more strongly specifically to unintentional ostracism supports previous hypotheses that loneliness increases both the awareness and perceived severity of social threats (Cacioppo, Hawkley, & Berntson, 2003). In other words, while the average person may be better prepared to brush off ambiguous experiences of exclusion, lonely people likely suffer more from being overlooked during everyday social interactions.

What we have learned about unintentional social exclusion is therefore three-fold. First, the perceived intent (or non-intent) of social exclusion likely communicates distinct messages about how others view us, which then changes the degree to which our sense of

self is threatened. Second, social exclusion hurts – even when it is accidental (and especially when it is not). Third, individual-level characteristics may make unintentional exclusion more painful for specific groups of people. While the current studies present an initial exploration of these research questions, there is still much to learn about how people process the intent behind exclusive behavior and what role these appraisals play in altering the subjective experience of exclusion. We conclude by acknowledging the limitations of our research design and recommending directions for future related research.

Limitations and Next Steps

Strengths and Weaknesses of the Current Paradigms

The autobiographical recall paradigm used in Studies 1 and 2 provided rich insight into people's real-life encounters with deliberate and unintentional social exclusion. However, as mentioned above, this paradigm was limited in that participants self-selected which experiences to share, their recollection may have been impacted by the passage of time, and the paradigm did not allow researchers to control for external variables that varied across people's experiences (e.g., the event's intensity, duration, recency, or the victim's relationship to their ostracizer). Additionally, the autobiographical recall paradigm was not well-suited for a parallel control condition; therefore, the effects of the deliberate and unintentional exclusion could be compared only to one another and not to a baseline of non-exclusion. We addressed these limitations in Study 4 by actively manipulating participants' social interactions within an immersive social scenario. This paradigm allowed us to *(1)* control for many external variables (e.g., the duration of the event and the relationship between victim and

ostracizers), *(2)* capture reactions to ostracism in the immediate moments after they occurred, and *(3)* directly compare a control condition, unintentional ostracism condition, and deliberate ostracism condition to one another.

One limitation of the immersive chatboard paradigm was that we did not include direct measures of perceived intent across the conditions, as we wanted participants to remain naïve to the study's true purpose. We attempted to address this limitation through Study 5 by having external observers watch the recorded interactions from each condition in Study 4, imagine themselves as the real participant in the scenario, and then report how much their group members intended to include them. While Study 5 results affirmed that observers perceived the ostracizers as demonstrating both less inclusive behavior and less inclusive intentions toward the participant in the deliberate ostracism condition (as compared to the unintentional ostracism condition), our findings could be further strengthened by replicating the validation study using participants immersed in the real paradigm. A second limitation of the immersive paradigm design was that the unintentional ostracism and deliberate ostracism conditions did not perfectly parallel one another – in the deliberate condition only, an additional brief conversation occurred through the online chatboard after the icebreaker videos were posted. To conclude more confidently that it was the attribution of intention alone that led to differing outcomes post-exclusion, we plan to conduct a follow-up study where we use the Cyberball paradigm to create identical experiences of exclusion and manipulate *only* the given interpretation for the group members' intent during the game. In this way, we can evaluate whether ostracism experiences that are objectively equal in every other way continue to result in distinct response patterns between conditions. Future research might

also benefit from developing immersive paradigms that allow researchers to compare incremental changes in the perceived likelihood of intent rather than considering perceptions of intent as a dichotomous variable (i.e., being 100% certain it was deliberate vs. being 100% certain it was unintentional). Capturing increasing degrees of certainty in the ostracizer's intent may be a more realistic model to explore how these appraisals change people's reactions to otherwise similar exclusion experiences.

As an additional reflection on the selection of paradigms, it is important to acknowledge that we observed consistent differences between results from the recall paradigm studies versus the immersive chatboard paradigm. In the recall paradigm, deliberate exclusion consistently led to more negative psychological and relational outcomes than unintentional exclusion; in the chatboard paradigm, findings were more mixed. Additionally, measures of the same construct (i.e., negative affect, feelings of exclusion, basic need fulfillment) demonstrated much more intense responses in the recall paradigm as compared to the laboratory manipulation. This contrast reiterates the importance of conducting both recall and immersive paradigm research, given that there are likely fundamental differences in the type of data they generate. Whereas recall paradigms benefit from collecting a breadth of more diverse and more intense lived experiences that may generalize better to real world settings, laboratory paradigms are better able to control for external variables while manipulating the variable of interest. Importantly, neither is particularly useful for evaluating long-term consequences of unintentional versus deliberate ostracism, as the immersive paradigm was designed to measure immediate post-exclusion reactions, and the recall paradigm relied on participant recollections that may have been biased by the passage of time. Within this project, we

felt that incorporating both paradigms benefitted our research and overall understanding of the short-term impact of unintentional ostracism, though we caution researchers to consider the differences in methodology when attempting to directly compare results between exclusion recall paradigms and immersive exclusion paradigms. Alternative research designs may be better equipped to compare differences in the long-term emotional and relational effects of deliberate versus unintentional exclusion.

Expanding the Current Research: Considering New Measures and Constructs

In future research using immersive paradigms, we hope to refine our measures to better capture how participants' behaviorally respond to their ostracizers post-exclusion. In the recall tasks, we found that deliberately excluded participants reported more withdrawal and relational conflict behaviors than did unintentionally excluded participants, but we found no condition differences in approach motivations during our immersive paradigm. In follow-up studies, we plan to revise our current approach motivation scale to more thoroughly represent the intended construct; we also plan to incorporate new measures to better distinguish between alternative motivations such as the desire to prove one's competence and the desire to punish one's ostracizers. We expect that more robust measures will provide greater insight into how perceived intent may differentially affect behavioral outcomes after exclusion.

During the current research, we also identified several new variables that may serve as important moderators or mediators between perceived intent and post-exclusion outcomes. For example, one potential moderator (not controlled for in the reported studies) was the nature of the relationship between the victim and ostracizer. While many of the exclusion experiences recalled in Study 1 and Study 2 involved friends or family

members with whom the participant shared an on-going relationship, the Study 4 paradigm explored exclusion in a context where participants were ostracized by strangers that they were unlikely to see again. We did not attempt to directly investigate the importance of the relationship shared by the ostracizer and victim; however, it merits exploration in future studies to better our understanding of real-world exclusion events. Secondly, the moderating effects of individual-level rejection sensitivity and loneliness on the psychological consequences of ostracism were touched upon only briefly in the current research. While initial evidence suggests that both variables are significantly associated with more negative outcomes after exclusion, the current research cannot speak to the long-term implications of this relationship.

Other variables that may mediate the relationship between perceived intent and post-exclusion outcomes include people's allocation of blame for their exclusion and the degree of relational certainty they feel toward their ostracizers. These variables were measured through several exploratory items in Study 2 and Study 5, respectively. The initial measures of blame indicated the following patterns: *(1)* deliberately ostracized participants blamed others more for their exclusion than did unintentionally ostracized participants, *(2)* participants were more likely to say that no one was to blame when they were unintentionally excluded, and *(3)* regardless of perceived intent, participants assigned very little blame to themselves for the exclusion. Future research should confirm these patterns and explore whether allocation of blame might serve as a direct predictor of negative psychological outcomes post-exclusion. For example, blaming others more for the exclusion might reduce the desire to affiliate; similarly, believing that one was not to blame for one's own exclusion might make deliberate ostracism feel particularly

unjust. Secondly, observers of unintentional ostracism felt less sure of what type of people their group members were or what the ostracizers thought of the person they ostracized as compared to observers who did not witness ostracism. A person's degree of certainty in the nature of their relationship with their group members may help predict how they emotionally and behaviorally respond to their group after being ostracized. Someone who is less certain of their relationship with their ostracizer, for example, may be more likely to give the other person the benefit of the doubt and to continue feeling and behaving positively toward them even after exclusion. Relational certainty should therefore be incorporated as a measure that follows the immersive paradigm interactions, as this construct has currently only been measured using observers.

Finally, based on our findings in Study 5 that observers rated participant interactions with their group members in the unintentional ostracism condition as equally close and equally positive (despite reporting that the group members were significantly less inclusive of the participant than in the control condition), a new line of research should explore in more depth how third-party observers perceive situations of unintentional ostracism versus other types of ostracism. If this research is able to identify factors that encourage or discourage observers from including someone who has been unintentionally excluded, it promises important implications for the development of strategies to reduce the frequency of unintentional exclusion in everyday social interactions. In conclusion, the cumulative findings of this research confirm that people are highly sensitive to cues of social exclusion, and the perceived intent behind the exclusive behavior plays a significant role in determining people's cognitive, emotional, and behavioral response to ostracism. Though purposeful exclusion may feel worse,

accidental exclusion still hurts. A deeper understanding of how and when unintentional exclusion threatens our sense of self therefore remains important in anticipating and addressing the consequences of everyday ostracism.

References

Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of other in the self scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology*, *63*(4), 596.

Ayduk, Ö., Gyurak, A., & Luerssen, A. (2008). Individual differences in the rejection–aggression link in the hot sauce paradigm: The case of rejection sensitivity. *Journal of Experimental Social Psychology*, *44*(3), 775-782.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*(3), 497.

Baumeister, R. F., & Tice, D. M. (1990). Point-counterpoints: Anxiety and social exclusion. *Journal of Social and Clinical Psychology*, *9*(2), 165-195.

Beekman, J. B., Stock, M. L., & Marcus, T. (2016). Need to belong, not rejection sensitivity, moderates cortisol response, self-reported stress, and negative affect following social exclusion. *The Journal of Social Psychology*, *156*(2), 131-138.

Böckler, A., Hömke, P., & Sebanz, N. (2014). Invisible man: Exclusion from shared attention affects gaze behavior and self-reports. *Social Psychological and Personality Science*, *5*(2), 140-148.

Bozin, M. A., & Yoder, J. D. (2008). Social status, not gender alone, is implicated in different reactions by women and men to social ostracism. *Sex Roles*, *58*(9-10), 713-720.

Buckley, K. E., Winkel, R. E., & Leary, M. R. (2004). Reactions to acceptance and

rejection: Effects of level and sequence of relational evaluation. *Journal of Experimental Social Psychology*, *40*(1), 14-28.

Buelow, M. T., Okdie, B. M., Brunell, A. B., & Trost, Z. (2015). Stuck in a moment and you cannot get out of it: The lingering effects of ostracism on cognition and satisfaction of basic needs. *Personality and Individual Differences*, *76*, 39-43.

Bungert, M., Koppe, G., Niedtfeld, I., Vollstädt-Klein, S., Schmahl, C., Lis, S., & Bohus, M. (2015). Pain processing after social exclusion and its relation to rejection sensitivity in borderline personality disorder. *PLOS One*, *10*(8).

Cacioppo, J. T., Hawkley, L. C., & Berntson, G. G. (2003). The anatomy of loneliness. *Current Directions in Psychological Science*, *12*(3), 71-74.

Carter-Sowell, A. R., Chen, Z., & Williams, K. D. (2008). Ostracism increases social susceptibility. *Social Influence*, *3*(3), 143-153.

Chow, R. M., Tiedens, L. Z., & Govan, C. L. (2008). Excluded emotions: The role of anger in antisocial responses to ostracism. *Journal of Experimental Social Psychology*, *44*(3), 896-903.

David, M. E., & Roberts, J. A. (2017). Phubbed and alone: Phone snubbing, social exclusion, and attachment to social media. *Journal of the Association for Consumer Research*, *2*(2), 155-163.

Debono, A., Corley, N., & Muraven, M. (2020). Why Am I Left Out? Interpretations of Exclusion Affect Antisocial and Prosocial Behaviors. *The American Journal of Psychology*, *133*(1), 63-79.

Deri, S., & Zitek, E. M. (2017). Did you reject me for someone else? rejections that are

comparative feel worse. *Personality and Social Psychology Bulletin*, *43*(12), 1675-1685.

DeWall, C. N., & Richman, S. B. (2011). Social exclusion and the desire to reconnect. *Social and Personality Psychology Compass*, *5*(11), 919-932.

DeWall, C. N., Twenge, J. M., Gitter, S. A., & Baumeister, R. F. (2009). It's the thought that counts: The role of hostile cognition in shaping aggressive responses to social exclusion. *Journal of Personality and Social Psychology*, *96*(1), 45.

Doerner, J. T. (2014). *Effect of perceived attributions about ostracism on social pain and task performance* (Master's thesis, Southern Illinois University at Carbondale). Available from ProQuest Dissertations & Theses Global database. (UMI No. 1584815).

Downey, G., & Feldman, S. I. (1996). Implications of rejection sensitivity for intimate relationships. *Journal of Personality and Social Psychology*, *70*(6), 1327.

Dvir, M., Kelly, J. R., & Williams, K. D. (2019). Is inclusion a valid control for ostracism?. *The Journal of Social Psychology*, *159*(1), 106-111.

Eisenberger, N. I., Lieberman, M. D., & Williams, K. D. (2003). Does rejection hurt? An fMRI study of social exclusion. *Science*, *302*(5643), 290-292.

Gaertner, L., Iuzzini, J., & O'Mara, E. M. (2008). When rejection by one fosters aggression against many: Multiple-victim aggression as a consequence of social rejection and perceived groupness. *Journal of Experimental Social Psychology*, *44*(4), 958-970.

Gardner, W. L., Pickett, C. L., Jefferis, V., & Knowles, M. (2005). On the outside looking in: Loneliness and social monitoring. *Personality and Social Psychology*

Bulletin, *31*(11), 1549-1560.

Geller, D. M., Goodstein, L., Silver, M., & Sternberg, W. C. (1974). On being ignored: The effects of the violation of implicit rules of social interaction. *Sociometry*, 541-556.

Gerber, J. P., Chang, S. H., & Reimel, H. (2017). Construct validity of Williams' ostracism needs threat scale. *Personality and Individual Differences*, *115*, 50-53.

Graupmann, V. (2018). Show me what threatens you, and I can tell who you are: Perception of threat and the self. *Self and Identity*, *17*(4), 407-417.

Graupmann, V. & Pfundmair, M. (2020). When social exclusion is mandated: COVID-19, social distancing, gender and psychological needs. PsyArXiv Preprints. https://psyarxiv.com/u362n/

Hawkley, L. C., & Cacioppo, J. T. (2010). Loneliness matters: A theoretical and empirical review of consequences and mechanisms. *Annals of Behavioral Medicine*, *40*(2), 218-227.

Hales, A. H., Dvir, M., Wesselmann, E. D., Kruger, D. J., & Finkenauer, C. (2018). Cell phone-induced ostracism threatens fundamental needs. *The Journal of Social Psychology*, *158*(4), 460-473.

Hughes, M. E., Waite, L. J., Hawkley, L. C., & Cacioppo, J. T. (2004). A short scale for measuring loneliness in large surveys. Results from two population-based studies. *Research on Aging*, *26*, 655–672.

Iannone, N. E., McCarty, M. K., Kelly, J. R., & Williams, K. D. (2014). Friends with each other but strangers to you: Source relationship softens ostracism's blow. *Group Dynamics: Theory, Research, and Practice*, *18*(4), 349.

Iannone, N. E., Kelly, J. R., & Williams, K. D. (2018). “Who’s that?”: The negative consequences of being out of the loop on pop culture. *Psychology of Popular Media Culture*, *7*(2), 113.

Jamieson, J. P., Harkins, S. G., & Williams, K. D. (2010). Need threat can motivate performance after ostracism. *Personality and Social Psychology Bulletin*, *36*(5), 690-702.

JASP Team (2020). JASP (Version 0.14.1)[Computer software]. Retrieved from https://jasp-stats.org/

Jones, E. E., Carter-Sowell, A. R., Kelly, J. R., & Williams, K. D. (2009). I'm out of the loop': Ostracism through information exclusion. *Group Processes & Intergroup Relations*, *12*(2), 157-174.

Jones, E. E., & Kelly, J. R. (2010). “Why am I out of the loop?” Attributions influence responses to information exclusion. *Personality and Social Psychology Bulletin*, *36*(9), 1186-1201.

King, L. A., & Geise, A. C. (2011). Being forgotten: Implications for the experience of meaning in life. *The Journal of Social Psychology*, *151*(6), 696-709.

Kothgassner, O. D., Kafka, J. X., Rudyk, J., Beutl, L., Hlavacs, H., & Felnhofer, A. (2014). Does social exclusion hurt virtually like it hurts in real-life? The role of agency and social presence in the perception and experience of social exclusion. *Proceedings of the International Society for Presence Research*, *15*, 45-56.

Koudenburg, N., Postmes, T., & Gordijn, E. H. (2011). Disrupting the flow: How brief silences in group conversations affect social needs. *Journal of Experimental Social Psychology*, *47*(2), 512-515.

Lakin, J. L., Chartrand, T. L., & Arkin, R. M. (2008). I am too just like you: Nonconscious mimicry as an automatic behavioral response to social exclusion. *Psychological Science*, *19*(8), 816-822.

Lindström, B., & Tobler, P. N. (2018). Incidental ostracism emerges from simple learning mechanisms. *Nature Human Behaviour*, *2*(6), 405-414.

Maner, J. K., DeWall, C. N., Baumeister, R. F., & Schaller, M. (2007). Does social exclusion motivate interpersonal reconnection? Resolving the" porcupine problem." *Journal of Personality and Social Psychology*, *92*(1), 42.

Masten, C. L., Telzer, E. H., Fuligni, A. J., Lieberman, M. D., & Eisenberger, N. I. (2012). Time spent with friends in adolescence relates to less neural sensitivity to later peer rejection. *Social Cognitive and Affective Neuroscience*, *7*(1), 106-114.

McDaniel, B. T., & Wesselmann, E. (2021). "You phubbed me for that?" Reason given for phubbing and perceptions of interactional quality and exclusion. *Human Behavior and Emerging Technologies*. https://doi.org/10.1002/hbe2.255

Molden, D. C., Lucas, G. M., Gardner, W. L., Dean, K., & Knowles, M. L. (2009). Motivations for prevention or promotion following social exclusion: Being rejected versus being ignored. *Journal of Personality and Social Psychology*, *96*(2), 415.

Nezlek, J. B., Kowalski, R. M., Leary, M. R., Blevins, T., & Holgate, S. (1997). Personality moderators of reactions to interpersonal rejection: Depression and trait self-esteem. *Personality and Social Psychology Bulletin*, *23*(12), 1235-1244.

Nezlek, J. B., Wesselmann, E. D., Wheeler, L., & Williams, K. D. (2012). Ostracism in everyday life. *Group Dynamics: Theory, Research, and Practice*, *16*(2), 91.

O'Reilly, J., Robinson, S. L., Berdahl, J. L., & Banki, S. (2015). Is negative attention better than no attention? The comparative effects of ostracism and harassment at work. *Organization Science*, *26*(3), 774-793.

Perlman, D., & Peplau, L. A. (1981). Toward a social psychology of loneliness. In R. Gillmour & S. Duck (Eds.), *Personal relationships: Personal relationships in disorder* (Vol. 3, pp. 31–56). London, UK: Academic Press.

Ren, D., Wesselmann, E., & Williams, K. D. (2016). Evidence for another response to ostracism: Solitude seeking. *Social Psychological and Personality Science*, *7*(3), 204-212.

Ren, D., Wesselmann, E. D., & Williams, K. D. (2018). Hurt people hurt people: ostracism and aggression. *Current Opinion in Psychology*, *19*, 34-38.

Ren, D., Wesselmann, E. D., & van Beest, I. (2020). Seeking solitude after being ostracized: A replication and beyond. *Personality and Social Psychology Bulletin*, 0146167220928238.

Renström, E. A., Bäck, H., & Knapton, H. M. (2020). Exploring a pathway to radicalization: The effects of social exclusion and rejection sensitivity. *Group Processes & Intergroup Relations*, *23*(8), 1204-1229.

Riva, P., Williams, K. D., Torstrick, A. M., & Montali, L. (2014). Orders to shoot (a camera): Effects of ostracism on obedience. *The Journal of Social Psychology*, *154*(3), 208-216.

Ronen, S., & Baldwin, M. W. (2010). Hypersensitivity to social rejection and perceived stress as mediators between attachment anxiety and future burnout: A prospective analysis. *Applied Psychology*, *59*(3), 380-403.

Sommer, K. L., & Bernieri, F. (2015). Minimizing the pain and probability of rejection: Evidence for relational distancing and proximity seeking within face-to-face interactions. *Social Psychological and Personality Science*, *6*(2), 131-139.

Sommer, K. L., Williams, K. D., Ciarocco, N. J., & Baumeister, R. F. (2001). When silence speaks louder than words: Explorations into the intrapsychic and interpersonal consequences of social ostracism. *Basic and Applied Social Psychology*, *23*(4), 225-243.

Schmitt, M. T., Davies, K., Hung, M., & Wright, S. C. (2010). Identity moderates the effects of Christmas displays on mood, self-esteem, and inclusion. *Journal of Experimental Social Psychology*, *46*(6), 1017-1022.

Stout, J. G., & Dasgupta, N. (2011). When he doesn't mean you: Gender-exclusive language as ostracism. *Personality and Social Psychology Bulletin*, *37*(6), 757-769.

The jamovi project (2021). *jamovi* (Version 1.6) [Computer Software]. Retrieved from https://www.jamovi.org

Twenge, J. M. (2006). When does social rejection lead to aggression? The influences of situations, narcissism, emotion, and replenishing connections. In K. D. Williams, J. P. Forgas, & W. von Hippel (Eds.), *The social outcast: Ostracism, social exclusion, rejection, and bullying* (pp. 201-212). New York, NY: Psychology Press.

Twenge, J. M., Baumeister, R. F., Tice, D. M., & Stucke, T. S. (2001). If you can't join them, beat them: effects of social exclusion on aggressive behavior. *Journal of Personality and Social Psychology*, *81*(6), 1058.

Twenge, J. M., Baumeister, R. F., DeWall, C. N., Ciarocco, N. J., & Bartels, J. M. (2007). Social exclusion decreases prosocial behavior. *Journal of Personality and Social Psychology*, *92*(1), 56.

Van Beest, I., & Williams, K. D. (2006). When inclusion costs and ostracism pays, ostracism still hurts. *Journal of Personality and Social Psychology*, *91*(5), 918.

Vanhalst, J., Soenens, B., Luyckx, K., Van Petegem, S., Weeks, M. S., & Asher, S. R. (2015). Why do the lonely stay lonely? Chronically lonely adolescents' attributions and emotions in situations of social inclusion and exclusion. *Journal of Personality and Social Psychology*, *109*(5), 932.

Warburton, W. A., Williams, K. D., & Cairns, D. R. (2006). When ostracism leads to aggression: The moderating effects of control deprivation. *Journal of Experimental Social Psychology*, *42*(2), 213-220.

Wesselmann, E. D., Cardoso, F. D., Slater, S., & Williams, K. D. (2012). To be looked at as though air: Civil attention matters. *Psychological Science*, *23*(2), 166-168.

Wesselmann, E. D., Grzybowski, M. R., Steakley- Freeman, D. M., DeSouza, E. R., Nezlek, J. B., & Williams, K. D. (2016). Social exclusion in every- day life. In P. Riva & J. Eck (Eds.), *Social exclusion: Psychological approaches to understanding and reducing its impact* (pp. 3–23). Cham, Switzerland: Springer International.

Wesselmann, E. D., Ren, D., & Williams, K. D. (2015). Motivations for responses to ostracism. *Frontiers in Psychology*, *6*, 40.

Wesselmann, E. D., Wirth, J. H., Mroczek, D. K., & Williams, K. D. (2012). Dial a

feeling: Detecting moderation of affect decline during ostracism. *Personality and Individual Differences*, *53*(5), 580-586.

Williams, K.D. (2009a). Ostracism: A temporal need-threat model. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 41, pp. 279–314). New York, NY: Academic Press.

Williams, K. D. (2009b). Ostracism: Effects of being ignored and excluded. In M. Zanna. (Ed.), *Advances in experimental social psychology* (Vol. 41, pp. 279-314). New York, NY: Academic Press.

Williams, K. D. (2012). Ostracism: The impact of being rendered mean- ingless. In M. Mikulincer & P. Shaver (Eds.), *Meaning, mortality, and choice: The social psychology of existential concerns* (pp. 309–323). Washington, DC: American Psychological Association. doi:10.1037/ 13748-017

Williams, K. D., Cheung, C. K., & Choi, W. (2000). Cyberostracism: effects of being ignored over the Internet. *Journal of Personality and Social Psychology*, *79*(5), 748.

Williams, K. D., Govan, C. L., Croker, V., Tynan, D., Cruickshank, M., & Lam, A. (2002). Investigations into differences between social-and cyberostracism. *Group dynamics: Theory, research, and practice*, *6*(1), 65.

Williams, K. D., & Sommer, K. L. (1997). Social ostracism by coworkers: Does rejection lead to loafing or compensation? *Personality and Social Psychology Bulletin*, *23*(7), 693-706.

Wirth, J. H., Bernstein, M. J., Wesselmann, E. D., & LeRoy, A. S. (2017). Social cues

establish expectations of rejection and affect the response to being rejected. *Group Processes & Intergroup Relations*, *20*(1), 32-51.

Wirth, J. H., Sacco, D. F., Hugenberg, K., & Williams, K. D. (2010). Eye gaze as relational evaluation: Averted eye gaze leads to feelings of ostracism and relational devaluation. *Personality and Social Psychology Bulletin*, *36*(7), 869-882.

Wittenbaum, G. M., Shulman, H. C., & Braz, M. E. (2010). Social ostracism in task groups: The effects of group composition. *Small Group Research*, *41*(3), 330-353.

Zadro, L., Williams, K. D., & Richardson, R. (2004). How low can you go? Ostracism by a computer is sufficient to lower self-reported levels of belonging, control, self-esteem, and meaningful existence. *Journal of Experimental Social Psychology*, *40*(4), 560-567.

Appendix A: Exploratory Factor Analyses for Study 1

Table A1

Study 1: EFA Pattern Matrix Loadings for Negative Affect Items

	Factor
	I
Item	
upset	**0.82**
sad	**0.77**
bad	**0.71**
angry	**0.63**
jealous	**0.44**
Factor characteristics	
I	2.36 (47.30%)

Note. Boldface indicates factor loadings > .40. Factor Eigenvalues and percent of variance explained by the factor are depicted under factor characteristics. All indices (Bartlett's test, KMO, MSA statistics) indicated that this data was factorable. The overall KMO value was .79. Principal axis factoring was used, and all factors with an Eigenvalue above 1 were retained.

Table A2

Study 1: EFA Pattern Matrix Loadings for Feelings of Exclusion Items

	Factor
	I
Item	
excluded	**0.77**
like an outsider	**0.77**
disconnected	**0.70**
left out	**0.61**
accepted (R)	**0.48**
like you belonged (R)	**0.40**
Factor characteristics	
I	2.45 (40.8%)

Note. Boldface indicates factor loadings > .40. Factor Eigenvalues and percent of variance explained by the factor are depicted under factor characteristics. All indices (Bartlett's test, KMO, MSA statistics) indicated that this data was factorable. The overall KMO value was .69. Principal axis factoring was used, and all factors with an Eigenvalue above 1 were retained.

Appendix B: Exploratory Factor Analyses for Study 2

Table B1

Study 2: EFA Pattern Matrix Loadings for Rejection Sensitivity Items

		Factor
	Label	I
Item		
When I think that other people don't like me, I get concerned and preoccupied with negative thoughts.	Rej6	**0.93**
If someone is unfriendly to me, I often assume it is because of something about me, and it keeps bothering me for a long time.	Rej5	**0.90**
If anyone doesn't seem to like me, I think about it for the rest of the day	Rej1	**0.87**
When I feel that someone is not nice to me, I find it hard to ignore that and move on.	Rej4	**0.85**
When interacting with other people, I pay close attention to any signs that they might dislike me.	Rej3	**0.78**
When I walk into a crowded room, I tend to notice anyone who looks like they don't like me.	Rej2	**0.77**
Factor characteristics		
I		4.35 (72.40%)

Note. Boldface indicates factor loadings > .40. Factor Eigenvalues and percent of variance explained by the factor are depicted under factor characteristics. All indices (Bartlett's test, KMO, MSA statistics) indicated that this data was factorable. The overall KMO value was .91. Principal axis factoring was used, and all factors with an Eigenvalue above 1 were retained.

Table B2

Study 2: EFA Pattern Matrix Loadings for Loneliness Items

	Factor
	I
Item	
In general, how often do you feel isolated from others?	**0.92**
In general, how often do you feel that you lack companionship?	**0.92**
In general, how often do you feel left out?	**0.90**
Factor characteristics	
I	2.51 (83.80%)

Note. Boldface indicates factor loadings > .40. Factor Eigenvalues and percent of variance explained by the factor are depicted under factor characteristics. All indices (Bartlett's test, KMO, MSA statistics) indicated that this data was factorable. The overall KMO value was .77. Principal axis factoring was used, and all factors with an Eigenvalue above 1 were retained.

Table B3

Study 2: EFA Pattern Matrix Loadings for Negative Affect Items

	Factor
	I
Item	
upset	**0.87**
bad	**0.85**
sad	**0.79**
distrustful	**0.77**
betrayed	**0.75**
uncertain	**0.74**
angry	**0.72**
less confident	**0.70**
confused	**0.63**
jealous	**0.46**
Factor characteristics	
I	5.42 (54.20%)

Note. Boldface indicates factor loadings > .40. Factor Eigenvalues and percent of variance explained by the factor are depicted under factor characteristics. All indices (Bartlett's test, KMO, MSA statistics) indicated that this data was factorable. The overall KMO value was .89. Principal axis factoring was used, and all factors with an Eigenvalue above 1 were retained.

Table B4

Study 2: EFA Pattern Matrix Loadings for Feelings of Exclusion Items

	Factor
	I
Item	
excluded	**0.91**
left out	**0.88**
like an outsider	**0.80**
disconnected	**0.73**
accepted (R)	**0.44**
like you belonged (R)	**0.42**
Factor characteristics	
I	3.15 (52.5%)

Note. Boldface indicates factor loadings > .40. Factor Eigenvalues and percent of variance explained by the factor are depicted under factor characteristics. All indices (Bartlett's test, KMO, MSA statistics) indicated that this data was factorable. The overall KMO value was .75. Principal axis factoring was used, and all factors with an Eigenvalue above 1 were retained.

Table B5

Study 2: Second EFA Pattern Matrix Loadings for Satisfaction of Basic Need Fulfillment Items

Item	Label	Hypothesized subscale	Factor I	Factor II
I felt like I belonged	**B4**	Belonging	**0.91**	-0.02
I felt important	**M4**	Meaning	**0.89**	-0.04
I felt satisfied	**E5**	Esteem	**0.83**	0.00
I felt positive acknowledgement	**B5**	Belonging	**0.81**	-0.21
I felt powerful	**C5**	Control	**0.80**	0.01
I felt useful	**M5**	Meaning	**0.77**	0.09
I felt liked	**E3**	Esteem	**0.67**	0.20
My self-esteem was high	**E2**	Esteem	**0.61**	0.23
I felt good about myself	**E1**	Esteem	**0.60**	0.27
I felt meaningless (R)	M2_R	Meaning	-0.10	**0.83**
I felt nonexistent (R)	M3_R	Meaning	0.04	**0.79**
I felt invisible (R)	M1_R	Meaning	0.01	**0.78**
I felt other people decided on the events in my life (R)	C4_R	Control	-0.21	**0.73**
I felt disconnected (R)	B1_R	Belonging	0.06	**0.71**
I felt like an outsider (R)	B3_R	Belonging	0.16	**0.71**
I felt insecure (R)	E4_R	Esteem	0.12	**0.70**
I felt rejected (R)	B2_R	Esteem	0.09	**0.68**
I felt unable to influence the actions of others (R)	C3_R	Control	-0.05	**0.61**
I felt I had control over myself	C1	Control	0.17	**0.43**
I felt I had the ability to determine my actions	C2	Control	0.26	**0.37**
Factor correlation				
I			8.12 (28.8%)	
II			0.41	2.80 (27.6%)

Note. Boldface indicates factor loadings > .30. Factor Eigenvalues and percent of variance explained by the factor are depicted on the diagonal. The correlation between the two factors is shown in parentheses. All indices (Bartlett's test, KMO, MSA statistics) indicated that this data was factorable. Overall KMO value was .91. Principal axis factoring with direct oblimin rotation was used. All factors with an Eigenvalue above 1 were retained.

Appendix C: Exploratory Factor Analyses for Study 3

Table C1

Study 3 Pilot: EFA Pattern Matrix Loadings for Attitudes toward Group Members Items

	Factor
	I
Item	
I would like to get to know **Participant 3** better.	**0.85**
I would like to work with **Participant 3** again if I were to participate in a follow-up study.	**0.85**
I would like to work with **Participant 2** again if I were to participate in a follow-up study.	**0.77**
I would like to get to know **Participant 2** better.	**0.76**
Participant 3 seems likable.	**0.68**
I think I would get along well with **Participant 3**.	**0.66**
Participant 2 seems likable.	**0.62**
I think I would get along well with **Participant 2**.	**0.59**
I think I have a lot in common with **Participant 3**.	**0.56**
I think I have a lot in common with **Participant 2**.	**0.55**
Factor characteristics	
I	4.85 (48.50%)

Note. Boldface indicates factor loadings > .40. Factor Eigenvalues and percent of variance explained by the factor are depicted under factor characteristics. All indices (Bartlett's test, KMO, MSA statistics) indicated that this data was factorable. The overall KMO value was .79. Principal axis factoring was used, and factors with an Eigenvalue above 1 were retained.

Appendix D: Exploratory Factor Analyses for Study 4

Table D1

Study 4: EFA Pattern Matrix Loadings for Rejection Sensitivity Items

		Factor
	Label	I
Item		
When I think that other people don't like me, I get concerned and preoccupied with negative thoughts.	Rej6	**0.90**
When I feel that someone is not nice to me, I find it hard to ignore that and move on.	Rej4	**0.89**
If anyone doesn't seem to like me, I think about it for the rest of the day.	Rej1	**0.85**
If someone is unfriendly to me, I often assume it is because of something about me, and it keeps bothering me for a long time.	Rej5	**0.85**
When interacting with other people, I pay close attention to any signs that they might dislike me.	Rej3	**0.75**
When I walk into a crowded room, I tend to notice anyone who looks like they don't like me.	Rej2	**0.62**
Factor characteristics		
I		3.99 (66.40%)

Note. Boldface indicates factor loadings > .40. Factor Eigenvalues and percent of variance explained by the factor are depicted under factor characteristics. All indices (Bartlett's test, KMO, MSA statistics) indicated that this data was factorable. The overall KMO value was .90. Principal axis factoring was used, and all factors with an Eigenvalue above 1 were retained.

Table D2

Study 4: EFA Pattern Matrix Loadings for Loneliness Items

	Factor
	I
Item	
In general, how often do you feel isolated from others?	**0.91**
In general, how often do you feel left out?	**0.78**
In general, how often do you feel that you lack companionship?	**0.71**
Factor characteristics	
I	1.93 (64.30%)

Note. Boldface indicates factor loadings > .40. Factor Eigenvalues and percent of variance explained by the factor are depicted under factor characteristics. All indices (Bartlett's test, KMO, MSA statistics) indicated that this data was factorable. The overall KMO value was .70. Principal axis factoring was used, and all factors with an Eigenvalue above 1 were retained.

Table D3

Study 4: EFA Pattern Matrix Loadings for Attitudes toward Group Members Items

	Factor
	I
Item	
I would like to work with **Participant 3** again if I were to participate in a follow-up study.	**0.81**
I think I would get along well with **Participant 3**.	**0.80**
I would like to get to know **Participant 3** better.	**0.77**
I would like to work with **Participant 2** again if I were to participate in a follow-up study.	**0.76**
Participant 3 seems likable.	**0.74**
I think I would get along well with **Participant 2**.	**0.71**
I would like to get to know **Participant 2** better.	**0.70**
Participant 2 seems likable.	**0.67**
I think I have a lot in common with **Participant 3**.	**0.63**
I think I have a lot in common with **Participant 2**.	**0.59**
Factor characteristics	
I	5.20 (52.00%)

Note. Boldface indicates factor loadings > .40. Factor Eigenvalues and percent of variance explained by the factor are depicted under factor characteristics. All indices (Bartlett's test, KMO, MSA statistics) indicated that this data was factorable. The overall KMO value was .87. Principal axis factoring was used, and all factors with an Eigenvalue above 1 were retained.

Table D4

Study 4: EFA Pattern Matrix Loadings for Affect Items

	Factor	
Item	I	II
good	**0.87**	0.01
happy	**0.85**	0.01
competent	**0.81**	0.04
proud	**0.80**	0.02
respected	**0.69**	-0.08
connected	**0.64**	-0.09
jealous	0.03	**0.88**
upset	0.04	**0.85**
sad	-0.01	**0.84**
angry	0.04	**0.82**
bad	-0.12	**0.68**
isolated	-0.18	**0.57**
Factor correlation		
I	5.38 (31.40%)	
II	-0.48	1.76 (31.30%)

Note. Boldface indicates factor loadings > .30. Factor Eigenvalues and percent of variance explained by the factor are depicted on the diagonal. The correlation between the two factors is shown below the diagonal. All indices (Bartlett's test, KMO, MSA statistics) indicated that this data was factorable. Overall KMO value was .86. Principal axis factoring with direct oblimin rotation was used. All factors with an Eigenvalue above 1 were retained.

Table D5

Study 4: Second EFA Pattern Matrix Loadings for Revised Basic Need Fulfillment Items

Item	Label	Hypothesized subscale	Factor I	Factor II
I feel like I will be nonexistent within the group (R)	M3_R	Meaning	**0.93**	-0.07
I feel like I will be an outsider in the group (R)	B3_R	Belonging	**0.84**	-0.01
I feel like I will be invisible to the group (R)	M1_R	Meaning	**0.82**	0.01
I feel like I will be rejected by the group (R)	B2_R	Esteem	**0.79**	-0.01
In the upcoming tasks, I feel like the other members of the group will decide everything (R)	C4_R	Control	**0.79**	-0.02
I feel like I will be meaningless to the group (R)	M2_R	Meaning	**0.76**	0.08
I feel like I will be disconnected from the group (R)	B1_R	Belonging	**0.72**	-0.01
In the upcoming tasks, I feel like I will be unable to influence the actions of the group (R)	C3_R	Control	**0.70**	-0.08
In the upcoming tasks, I feel like the other members of the group will interact with me a lot	B5	Belonging	**0.68**	0.02
I feel like I will be useful to the group	M5	Meaning	**0.67**	0.15
I feel like I will belong to the group	B4	Belonging	**0.64**	0.05
I feel like I will be important to the group	M4	Meaning	**0.46**	0.29
I feel like I will have control over the course of the upcoming group tasks	C1	Control	**0.43**	0.19
I feel like I will have the ability to significantly alter events in the upcoming group tasks	C2	Control	**0.31**	0.19
My self-esteem is high	E2	Esteem	-0.10	**0.94**
I feel good about myself	E1	Esteem	0.03	**0.88**
I feel satisfied	E5	Esteem	0.12	**0.64**
I feel liked	E3	Esteem	0.26	**0.61**
I feel insecure (R)	E4_R	Esteem	0.13	**0.42**
Factor correlation				
I			8.90 (38.30%)	
II			0.61	1.21 (16.50%)

Note. Boldface indicates factor loadings > .30. Factor Eigenvalues and percent of variance explained by the factor are depicted on the diagonal. The correlation between the two factors is shown below the diagonal. All indices (Bartlett's test, KMO, MSA statistics) indicated that this data was factorable. The overall KMO value was .93. Direct oblimin rotation was used with principal axis factoring. Principal axis factoring with direct oblimin rotation was used. All factors with an Eigenvalue above 1 were retained.

Appendix E: Exploratory Factor Analyses for Study 5

Table E1

Study 5: EFA Pattern Matrix Loadings for Certainty Items

	Factor
	I
Item	
It's clear how my team members perceive me.	**0.95**
I have a sense for how my team members feel about me.	**0.95**
I can tell what type of people my team members are.	**0.60**
Factor characteristics	
I	2.17 (72.3%)

Note. Boldface indicates factor loadings > .40. Factor Eigenvalues and percent of variance explained by the factor are depicted under factor characteristics. All indices (Bartlett's test, KMO, MSA statistics) indicated that this data was factorable. The overall KMO value was .65. Principal axis factoring was used, and all factors with an Eigenvalue above 1 were retained.

Appendix F: Nonparametric Analyses of Single Likert-Type Items

Study 1

Ostracizer's perceived intent. A Mann-Whitney U analysis confirmed a significant difference in group medians, $U_{(153)} = 4968$, Z = 3.29, $p < .001$, with a mean rank of 119.1 for perceived intentionality in the deliberate condition and a mean rank of 73.6 in the unintentional condition. The *df* was calculated as the total *N* minus two, and the Z-score was calculated through an online calculator based on the corresponding *p* value.

Study 2

Ostracizer's perceived intent. A Mann-Whitney U analysis confirmed a significant difference in group medians, $U_{(247)} = 14554$, Z = 3.29, $p < .001$, with a mean rank of 177.8 for perceived intentionality in the deliberate condition and a mean rank of 68.2 in the unintentional condition.

Event valence. A Mann-Whitney U analysis confirmed a significant difference in group medians, $U_{(247)} = 4007.5$, Z = 3.29, $p < .001$, with a mean rank of 96.1 for event valence in the deliberate condition and a mean rank of 156.1 in the unintentional condition. Lower ranks indicate more negative valence; higher ranks indicate more positive valence.

Emotional impact in the moment. A Mann-Whitney U analysis confirmed a significant difference in group medians, $U_{(247)} = 9092$, Z = 2.41, $p < .05.$, with a mean rank of 135.5 for emotional impact in the moment in the deliberate condition and a mean rank of 113.7 in the unintentional condition.

Emotional impact over time. A Mann-Whitney U analysis confirmed a significant difference in group medians, $U_{(247)} = 10165$, Z = 3.29, $p < .001$, with a mean rank of 143.8 for emotional impact over time in the deliberate condition and a mean rank of 104.8 in the unintentional condition.

Perceived blame for exclusion event.

Blaming self. A Mann-Whitney U analysis confirmed there was no significant difference in group medians, $U_{(247)} = 7667$, Z = 0.15, $p = .88$, with a mean rank of 124.4 for self-blame in the deliberate condition and a mean rank of 125.6 in the unintentional condition.

Blaming others. A Mann-Whitney U analysis confirmed a significant difference in group medians, $U_{(247)} = 11995$, Z = 3.29, $p < .001$. , with a mean rank of 158.0 for blaming others in the deliberate condition and a mean rank of 89.5 in the unintentional condition.

Blaming no one. A Mann-Whitney U analysis confirmed a significant difference in group medians, $U_{(247)} = 3890.5$, Z = 3.29, $p < .001$, with a mean rank of 95.2 for blaming no one in the deliberate condition and a mean rank of 157.1 in the unintentional condition.

Study 3

Feelings of connection.

Feeling connected to group. A Mann-Whitney U analysis confirmed there was no significant difference in group medians, $U_{(189)} = 3461.5$, Z = 1.41, $p = .16$, with a mean rank of 84.15 for feelings of connection to the group in the control condition and a mean rank of 74.29 in the unintentional condition. When four outliers were removed, the

Mann-Whitney U similarly confirmed that there was a significant difference between conditions, $U_{(189)} = 3457.5$, Z = 2.02, $p < .05$, with a mean rank of 84.10 for feelings of connection to the group in the control condition and a mean rank of 74.34 in the unintentional ostracism condition.

Feeling connected to culture. A Mann-Whitney U analysis confirmed there was no significant difference in group medians, $U_{(189)} = 2980$, Z = 0.36, $p = .72$, with a mean rank of 77.73 for feeling connected to one's own culture in the control condition and a mean rank of 80.16 in the unintentional condition.

Feeling connected to past. A Mann-Whitney U analysis confirmed there was no significant difference in group medians, $U_{(189)} = 3263.5$, Z = 0.69, $p = .49$, with a mean rank of 81.51 for feeling connected to the past in the control condition and a mean rank of 76.70 in the unintentional condition.

Study 4

Feeling isolated. A Kruskal Wallis analysis confirmed the results of the ANOVA. The differences between the three groups were statistically significant, H(2) = 19.96, $p < .001$, $\eta^2 = .10$ (medium effect), with a mean rank of 102.53 for deliberate ostracism condition, 98.63 for the unintentional ostracism condition, and 66.72 for the control condition. Post-hoc comparisons indicated the same pattern of significance as the ANOVA: the control group was significantly different than both the deliberate and unintentional ostracism groups, but the two ostracism groups did not differ from one another.

Feeling connected. A Kruskal Wallis analysis confirmed the results of the ANOVA. The differences between the three groups were significant, H(2) = 7.51, $p =$

.023, $\eta^2 = .03$ (small effect), with a mean rank of 78.95 for deliberate ostracism condition, 86.11 for the unintentional ostracism condition, and 103.67 for the control condition. Paralleling the ANOVA results, only the difference between the deliberate ostracism and control condition was significant. When outliers were removed, the difference between the three groups was heightened, $H(2) = 12.45$, $p < .01$, $\eta^2 = .06$ (medium effect), with a mean rank of 78.95 for deliberate ostracism condition, 86.11 for the unintentional ostracism condition, and 103.67 for the control condition. Again, confirming the ANOVA results, post-hoc comparisons with outliers excluded indicated a significant difference between the control group and the unintentional ostracism group.

Study 5

Valence of group interaction. A Kruskal Wallis analysis confirmed the results of the ANOVA. The differences between the three groups were statistically significant, $H(2) = 55.25$, $p < .001$, $\eta^2 = .17$ (large effect), with a mean rank of 108.93 for deliberate ostracism condition, 181.35 for the unintentional ostracism condition, and 190.98 for the control condition. Post-hoc comparisons indicated the same pattern identified by the ANOVA: participants in the deliberate ostracism condition reported a significantly more negative interaction than participants in either the control or unintentional ostracism conditions. Control and unintentional ostracism conditions did not differ from one another.

IoS scale. A Kruskal Wallis analysis confirmed the results of the ANOVA. The differences between the three groups were statistically significant, $H(2) = 41.00$, $p < .001$, $\eta^2 = .13$ (medium effect), with a mean rank of 116.46 for deliberate ostracism condition, 172.37 for the unintentional ostracism condition, and 191.73 for the control condition.

Post-hoc comparisons indicated the same pattern identified by the ANOVA: participants in the deliberate ostracism condition reported greater distance between Participant 1 and their group members than participants in either the control or unintentional ostracism conditions. Control and unintentional ostracism conditions did not differ from one another.

Appendix G: Interpretation and Conversion of Effect Sizes

Interpreting effect sizes: https://www.spss-tutorials.com/effect-size/

Cramer's V

- .10 – low association
- .30 – moderate association
- .50 – high association

Cohen's *d*

- .20 – small effect
- .50 – medium effect
- .80 – large effect

Partial eta squared (η^2)

- .01 – small effect
- .059 – medium
- .138 – large

Omega squared (ω^2)

- .01 – small effect
- .06 – medium
- .14 – large

Cohen's w

- .10 – small effect
- .30 – medium effect
- .50 – large effect

Converting between effect sizes

Calculators

- Converting between partial eta squared, Cohen's *d*, and Cohen's *f:* https://www.psychometrica.de/effect_size.html
- Calculating partial eta squared for MANOVAs: https://effect-size-calculator.herokuapp.com/
- Calculating partial eta squared for Kruskal Wallis analyses: https://www.psychometrica.de/effect_size.html
- Calculating Z-scores from p values for Mann-Whitney U: https://goodcalculators.com/z-score-calculator/

Converting by formula

- Calculating Cohen's w from Chi-Square Value: https://ncss-wpengine.netdna-ssl.com/wp-content/themes/ncss/pdf/Procedures/NCSS/Chi-Square_Effect_Size_Calculator.pdf

$$\chi^2 = Nw^2$$

- Calculating adjusted omega squared for *Welch's F* test effects

$$est.\omega^2 = \frac{df_{bet}(F-1)}{df_{bet}(F-1)+N_T}$$

- Converting between partial eta squared and Cohen's *f*

$$f = \sqrt{\frac{\eta_p^2}{1-\eta_p^2}}$$

- Converting between Cohen's *f* and Cohen's *d*

$$f = \frac{d}{2}$$

Appendix H: Summary of Hypotheses by Study

Study 1:

Hypothesis I. Compared to the unintentional ostracism condition, participants who were excluded deliberately were predicted to report greater feelings of exclusion.

Hypothesis III. Compared to the unintentional ostracism conditions, participants who were deliberately excluded were predicted to report *(a)* less desire to affiliate with group members.

RQ I. How did the participants' *(a)* overall satisfaction of their basic psychological needs, *(b)* satisfaction of belonging needs, and *(c)* satisfaction of meaning in life needs compare between the deliberate and unintentional ostracism conditions?

RQ II. *(a)* How did participant affect vary between deliberate and unintentional ostracism conditions?

Study 2:

Hypothesis I. Compared to the unintentional ostracism condition, participants who were excluded deliberately were predicted to report greater feelings of exclusion.

Hypothesis III. Compared to the unintentional ostracism condition, participants who were deliberately excluded were predicted to report *(a)* less desire to affiliate with group members.

RQ I. How did the participants' *(a)* overall satisfaction of their basic psychological needs, *(b)* satisfaction of belonging needs, and *(c)* satisfaction of meaning in life needs compare between the deliberate and unintentional ostracism conditions?

RQ II. *(a)* How did participant affect vary between deliberate and unintentional ostracism conditions?

RQ VI. What, if any, association exists between individual-level rejection sensitivity and participant outcomes after experiencing either deliberate or unintentional ostracism?

RQ VII. What, if any, association exists between general loneliness and participant outcomes after experiencing either deliberate or unintentional ostracism?

Study 3:

Hypothesis II. Participants who were ostracized were predicted to report lower overall fulfillment of their basic psychological needs than participants in the control condition.

RQ III. How did control participants compare to unintentionally ostracized participants in their attitude toward their group members?

Study 4:

Hypothesis I. Compared to the control and unintentional ostracism conditions, participants who were excluded deliberately were predicted to report greater feelings of exclusion.

Hypothesis II. Participants experiencing either type of ostracism were predicted to report lower overall fulfillment of their basic psychological needs than participants in the control condition.

Hypothesis III. Compared to the control and unintentional ostracism conditions, participants who were deliberately excluded were predicted to report *(a)* less desire to affiliate with group members and *(b)* a more negative attitude toward their group members.

RQ I. How did the participants' *(a)* overall satisfaction of their basic psychological needs, *(b)* satisfaction of belonging needs, and *(c)* satisfaction of meaning in life needs compare between the deliberate and unintentional ostracism conditions?

RQ II *(b).* How did participant affect vary between deliberate ostracism, unintentional ostracism, and control conditions?

RQ III. How did control participants compare to unintentionally ostracized participants in their attitude toward their group members?

RQ IV. How did control participants compare to unintentionally ostracized participants in their desire to affiliate with their group members?

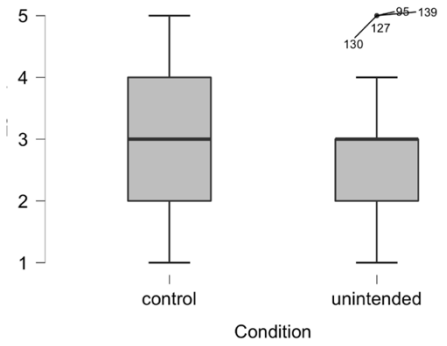
RQ V. How did participants across the control, unintentional ostracism, and deliberate ostracism compare in their effort on a collaborative group task?

RQ VI. What, if any, association exists between individual-level rejection sensitivity and participant outcomes after experiencing either deliberate or unintentional ostracism?

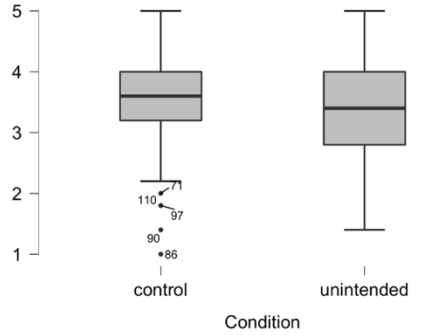
RQ VII. What, if any, association exists between general loneliness and participant outcomes after experiencing either deliberate or unintentional ostracism?

Appendix I: Boxplot Graphs of Outliers

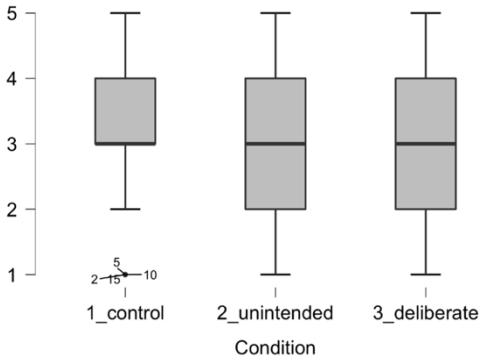
Study 3: Feelings of Connection Outliers (5-point Scale)



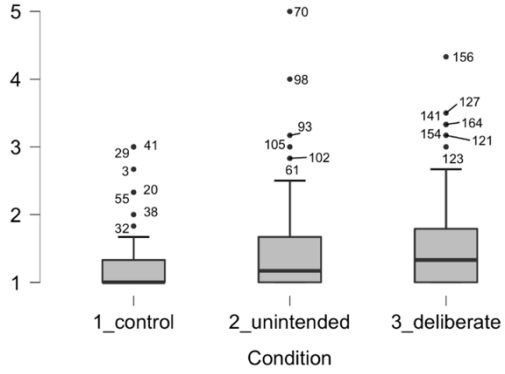
Study 3: Self-Esteem Subscale Outliers (5-point Scale)



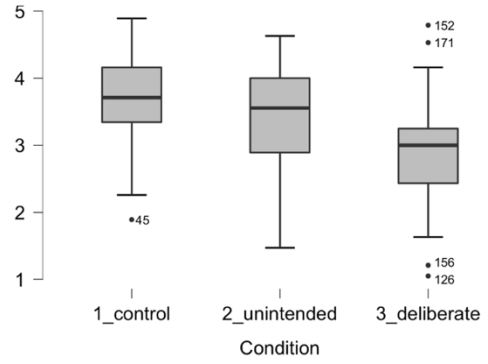
Study 4: Feelings of Connection Outliers (5-point Scale)



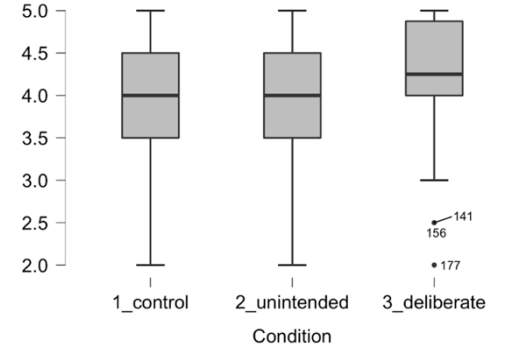
Study 4: Negative Affect Outliers (5-point Scale)



Study 4: Overall Need Fulfillment Outliers (5-point Scale)



Study 4: Self-Reported Effort Outliers (5-point Scale)



Appendix J: Study 1 Materials

STUDY NAME

"Tell us about a time…" (DePaul University)

DESCRIPTION

In this online research study, you will be asked to tell us about some of your previous social experiences. First you will be prompted to describe a memory, then you will answer some questions about how the event you remembered made you feel at the time. The survey will conclude by asking some general demographic questions, including your age and gender. The study will take no more than 30 minutes and you will earn .5 psychology pool credits for your participation.

STUDY MATERIALS

Page 1 – Informed Consent + Sona ID

Page 2 - Writing Prompt Directions

On the next page, you will be prompted to respond to a prompt about a time in your life. **Please answer this next question in as much detail as possible**, as it is the main activity in this survey. Afterwards, you will finish by answering several multiple-choice follow-up questions about your experience.

Page 3 - Writing Prompt (2 conditions: unintentional vs. deliberate)

Unintentional Exclusion Prompt	Deliberate Exclusion Prompt
Bring to mind a time, from your own life, where you felt left out by one or more people but you believe the isolation was **unintentional**. In other words, the person (or people) **did not intend** to leave you out of the situation. For example... *...maybe you see a photo online of people you know hanging out but your friend forgot to tell you about the event* *...or perhaps your new friends keep laughing at inside jokes that you don't get*	Bring to mind a time, from your own life, where you felt left out by one or more people and you believe the isolation was **deliberate**. In other words, the person (or people) **intended** to leave you out of the situation. For example... *...maybe an acquantaince invites your friend to a party in front of you but doesn't invite you* *...or perhaps your close friend chooses someone other than you to work with on a*

because they happened before you were part of the group *...or perhaps you try to make conversation with your coworker, but your coworker is distracted by texting on their phone* In the space below, describe the specific experience of social exclusion that you brought to mind. Please be as detailed as possible in your description of the event - who was involved, what happened, how did it make you feel, and how did it affect your relationship with this person after the fact?	*class project* *...or perhaps your coworker directly ignores you when you say hello* In the space below, describe the specific experience of social exclusion that you brought to mind. Please be as detailed as possible in your description of the event - who was involved, what happened, how did it make you feel, and how did it affect your relationship with this person after the fact?

Page 4 – Negative Affect (5 items)
Thinking back on this experience, how much did this **unintentional/intentional social exclusion** make you feel...

		Not at all						Very much
Neg_bad	Bad	○	○	○	○	○	○	○
Neg_sad	Sad	○	○	○	○	○	○	○
Neg_angry	Angry	○	○	○	○	○	○	○
Neg_upset	Upset	○	○	○	○	○	○	○
Neg_jealous	Jealous	○	○	○	○	○	○	○

Page 5 – Intentionality (1 item)

		Not at all				Very much
intentionality	How much do you believe that the person or people you described **intended** to exclude you in this situation?	○	○	○	○	○

Page 6 – Feelings of Exclusion + Pos Affect (6 items + 2 items)
In light of this **unintentional/intentional social exclusion**, to what extent did you feel...

		Not at all						Very much
EX_ belonged_R	Like you belonged	○	○	○	○	○	○	○
EX_leftout	Left out	○	○	○	○	○	○	○
Free_1	Autonomous	○	○	○	○	○	○	○
EX_ excluded	Excluded	○	○	○	○	○	○	○
EX_ outsider	Like an outsider	○	○	○	○	○	○	○
EX_ disconnected	Disconnected	○	○	○	○	○	○	○
EX_ accepted_R	Accepted	○	○	○	○	○	○	○
Free_2	Free	○	○	○	○	○	○	○

Page 7 – Need Fulfillment (19 items)
Please indicate the extent to which the following statements describe how you felt after experiencing this type of social exclusion.

		Not at all				Very much
E1	I felt good about myself.	○	○	○	○	○
B1_R	I felt disconnected.	○	○	○	○	○
B2_R	I felt rejected.	○	○	○	○	○
C1	I felt I had control over my situation	○	○	○	○	○
E2	My self-esteem was high.	○	○	○	○	○
B2_R	I felt invisible.	○	○	○	○	○

M2_R	I felt meaningless.	○	○	○	○	○
C2	I felt I had the ability to determine my actions.	○	○	○	○	○
E3	I felt liked.	○	○	○	○	○
B3_R	I felt like an outsider.	○	○	○	○	○

Page 8 - Please continue thinking about how you felt after the experience you shared as you answer the questions below.

M3_R	I felt nonexistent.	○	○	○	○	○
C3_R	I felt unable to influence the actions of others.	○	○	○	○	○
E4_R	I felt insecure.	○	○	○	○	○
B4	I felt like I belonged.	○	○	○	○	○
M4	I felt important	○	○	○	○	○
C4_R	I felt other people decided on the events in my life.	○	○	○	○	○
E5	I felt satisfied.	○	○	○	○	○
B5	I felt positive acknowledgement.	○	○	○	○	○
M5	I felt useful.	○	○	○	○	○

Page 9 – Behaviors (8 items)
Please indicate how much the following statements describe your experience **after being excluded** by the person or people you described.

		Not at all				Very much
Approach_interactedagain	I interacted with the person again after that experience.	○	○	○	○	○
Ruminate_thoughtaboutexperience	I thought about the experience after it happened.	○	○	○	○	○
Approach_gettok	I made an effort to get to know the	○	○	○	○	○

nowpersonbetter	person who excluded me better.					
Approach_distancedmyself_R	I distanced myself from the person who excluded me.	○	○	○	○	○
Approach_minimizedinteractions_R	I minimized my interactions with the person who excluded me.	○	○	○	○	○
Ruminate_wantedostracizertoknowhowifelt	I wanted the person who excluded me to know how the experience made me feel.	○	○	○	○	○
Approach_pretendedsituationhadnthappened	If I was around the person who excluded me, I acted as though the previous situation had never happened.	○	○	○	○	○
Ruminate_saredexperiencewithothers	I told someone else about my experience feeling excluded.	○	○	○	○	○

Page 10 – Inclusion Prompt (1 item)

To conclude, please briefly tell us about a recent time when you felt included in a group or very connected to other people.

_____

Page 11 – Demographics (3 items)

What is your age? _____

What is your sex?
- o Male
- o Female

What is your ethnicity?
- o American Indian or Alaska Native (1)
- o Hawaiian or Other Pacific islander (2)
- o Asian or Asian American (3)
- o Black or African American (4)
- o Hispanic or Latino/a (5)
- o European American/Non-Hispanic White (6)

Appendix K: Study 2 Materials

STUDY NAME

"Tell us about a time…" (MTurk)

STUDY MATERIALS

Page 1 - Information Sheet

Page 2 - Rejection Sensitivity Scale (6 items)

Please indicate the extent to which you agree or disagree with the following statements. There are no right or wrong answers, so please answer as honestly as possible.

		Strongly disagree -3	Moderately disagree -2	Mildly disagree -1	Neither agree nor disagree 0	Mildly agree 1	Moderately agree 2	Strongly agree 3
Rej 1	If anyone doesn't seem to like me, I think about it for the rest of the day.	○	○	○	○	○	○	○
Rej 2	When I walk into a crowded room, I tend to notice anyone who looks like they don't like me.	○	○	○	○	○	○	○
Rej 3	When interacting with other people, I pay close attention to any signs that they might dislike me.	○	○	○	○	○	○	○
Rej 4	When I feel that someone is not nice to me, I find it hard to ignore that and move on.	○	○	○	○	○	○	○
Rej 5	If someone is unfriendly to me, I often assume it is because of something about me, and it keeps bothering me for a long time.	○	○	○	○	○	○	○
Rej 6	When I think that other people don't like me, I get concerned and preoccupied with negative thoughts.	○	○	○	○	○	○	○

Page 3 - Loneliness Scale (3 items)

We would like to ask you a few questions about your relationships with others. Remember, when the term "others" is used, it includes friends, neighbors, family members, or anyone else you interact with regularly.

		Never 1	Rarely 2	Sometimes 3	Often 4	Very often 5
Lonely_lackcompanionship	In general, how often do you feel that you lack companionship?	○	○	○	○	○
Lonely_left out	In general, how often do you feel left out?	○	○	○	○	○
Lonely_isolated	In general, how often do you feel isolated from others?	○	○	○	○	○

Page 4 - Writing Prompt Directions

On the next page, you will be prompted to respond to a prompt about a time in your life. **Please answer this next question in as much detail as possible**, as it is the main activity in this survey. Your response must be a minimum of 500 characters. Afterwards, you will finish by answering several multiple-choice follow-up questions about your experience.

Page 5 - Writing Prompt (2 conditions: unintentional vs. deliberate)

Unintentional Exclusion Prompt	Deliberate Exclusion Prompt
Bring to mind a time, from your own life, where you felt left out by one or more people but you believe the isolation was **unintentional**. In other words, the person (or people) **did not intend** to leave you out of the situation. For example... *...maybe you see a photo online of people you know hanging out but your friend forgot to tell you about the event* *...or perhaps your new friends keep laughing at inside jokes that you don't get because they happened before you were part of the group* *...or perhaps you try to make conversation with your coworker, but your coworker is distracted by texting on their phone* In the space below, describe the specific experience of social exclusion that you brought to mind. Please be as detailed as possible in your description of the event - who was involved, what happened, how did it make you feel, and how did it affect your relationship with this person after the fact? *This response is required to be a minimum of 500 characters.*	Bring to mind a time, from your own life, where you felt left out by one or more people and you believe the isolation was **deliberate**. In other words, the person (or people) **intended** to leave you out of the situation. For example... *...maybe an acquantaince invites your friend to a party in front of you but doesn't invite you* *...or perhaps your close friend chooses someone other than you to work with on a class project* *...or perhaps your coworker directly ignores you when you say hello* In the space below, describe the specific experience of social exclusion that you brought to mind. Please be as detailed as possible in your description of the event - who was involved, what happened, how did it make you feel, and how did it affect your relationship with this person after the fact? *This response is required to be a minimum of 500 characters.*

Page 6 – Valence + Emotional Impact (1 item + 2 items)

		Very negative -3	Moderately negative -2	Slightly negative -1	Neither positive nor negative 0	Slightly positive +1	Moderately positive +2	Strongly positive +3
valence	Thinking back on this event, how positive or negative was the experience you described?	○	○	○	○	○	○	○

		Not at all 1	A little 2	Some what 3	Moderately 4	Quite a bit 5	Very much 6	Extremely 7
Impact_moment	How much did this experience emotionally impact you **in the moment**?	○	○	○	○	○	○	○

		Not at all 1	A little 2	Some what 3	Moderately 4	Quite a bit 5	Very much 6	Extremely 7
Impact_overtime	How much did this experience emotionally impact you **over time**?	○	○	○	○	○	○	○

Page 7 – Negative Affect & Uncertainty (10 items)

Thinking back on this experience, how much did this **<u>unintentional/intentional social exclusion</u>** make you feel...

		Not at all 1	A little 2	Some what 3	Moderately 4	Quite a bit 5	Very much 6	Extremely 7
Neg_bad	bad	○	○	○	○	○	○	○
Neg_sad	sad	○	○	○	○	○	○	○
Neg_angry	angry	○	○	○	○	○	○	○
Neg_upset	upset	○	○	○	○	○	○	○
Neg_jealous	jealous	○	○	○	○	○	○	○
feel_confused	confused	○	○	○	○	○	○	○
feel_uncertain	uncertain	○	○	○	○	○	○	○

feel_distrustful	distrustful	○	○	○	○	○	○	○
feel_lessconfident	less confident	○	○	○	○	○	○	○
feel_betrayed	betrayed	○	○	○	○	○	○	○

Page 8 – Intentionality (1 item)

		Not at all 1	A little 2	Somewhat 3	Quite a Bit 4	Very Much 5
intentionality	How much do you believe that the person or people you described **intended** to exclude you in this situation?	○	○	○	○	○

Page 9 – Feelings of Exclusion (6 items)
In light of this **<u>unintentional/intentional social exclusion</u>**, to what extent did you feel...

		Not at all 1	A little 2	Some what 3	Moderately 4	Quite a bit 5	Very much 6	Completely 7
EX_belonged_R	Like you belonged	○	○	○	○	○	○	○
EX_leftout	Left out	○	○	○	○	○	○	○
EX_excluded	Excluded	○	○	○	○	○	○	○
EX_outsider	Like an outsider	○	○	○	○	○	○	○
EX_disconnected	Disconnected	○	○	○	○	○	○	○
EX_accepted_R	Accepted	○	○	○	○	○	○	○

Page 10 – Blame (3 items)
Thinking back on this experience, to what extent do you believe…

		Not at all 1	A little 2	Some what 3	Moder ately 4	Quite a bit 5	Very much 6	Compl etely 7
Blame_yourself	You were to blame for what happened	○	○	○	○	○	○	○
Blame_others	Other people were to blame for what happened	○	○	○	○	○	○	○
Blame_noone	No one was to blame for what happened	○	○	○	○	○	○	○

Page 11 – Attention Check (1 item)

Which of the following experiences of social exclusion were you instructed to write about during this survey?

- ○ Unintentional exclusion
- ○ Deliberate exclusion (i.e., intentional)

Page 12 – Need Fulfillment (20 items)
Please indicate the extent to which the following statements describe how you felt after experiencing this type of social exclusion.

		Not at all 1	A little 2	Somewha t 3	Quite a Bit 4	Very Much 5
E1	I felt good about myself.	○	○	○	○	○
B1_R	I felt disconnected.	○	○	○	○	○
B2_R	I felt rejected.	○	○	○	○	○
C1	I felt I had control over myself.	○	○	○	○	○
E2	My self-esteem was high.	○	○	○	○	○

M1_R	I felt invisible.	○	○	○	○	○
M2_R	I felt meaningless.	○	○	○	○	○
C2	I felt I had the ability to determine my actions.	○	○	○	○	○
E3	I felt liked.	○	○	○	○	○
B3_R	I felt like an outsider.	○	○	○	○	○
Page 13 - Please continue thinking about how you felt after the experience you shared as you answer the questions below.						
M3_R	I felt nonexistent.	○	○	○	○	○
C3_R	I felt unable to influence the actions of others.	○	○	○	○	○
C5	I felt powerful.	○	○	○	○	○
E4_R	I felt insecure.	○	○	○	○	○
B4	I felt like I belonged.	○	○	○	○	○
M4	I felt important	○	○	○	○	○
C4_R	I felt other people decided on the events in my life.	○	○	○	○	○
E5	I felt satisfied.	○	○	○	○	○
B5	I felt positive acknowledgement.	○	○	○	○	○
M5	I felt useful.	○	○	○	○	○

Page 14 – Behaviors (21 items)
Please indicate how much the following statements describe your experience **after being excluded** by the person or people you described.

		Not at all 1	A little 2	Somewhat 3	Quite a Bit 4	Very Much 5
Beh_investmore	I wanted to invest more in my relationship with the person who excluded me.	○	○	○	○	○
Beh_minimizeinterac	I minimized my interactions with the person who excluded me.	○	○	○	○	○
Beh_thoughtaboutit	I thought about the experience of being excluded after it happened.	○	○	○	○	○
Beh_talkaboutit	I wanted to talk through the experience with someone after it happened.	○	○	○	○	○
Beh_wantedthemtoknow	I wanted the person who excluded me to know how the experience made me feel.	○	○	○	○	○
Beh_punishgetback	I wanted to get back at the person who excluded me.	○	○	○	○	○
Beh_didntholdagains	I didn't hold the experience against the person who had excluded me.	○	○	○	○	○
Beh_sharedfeelings	I shared my feelings about the experience with the person who excluded me.	○	○	○	○	○

Page 15 - Please continue thinking about how much the following statements describe your experience after being excluded by the person or people you described.

Beh_needtoprocess	I needed to process the experience after it happened.	○	○	○	○	○
Beh_hidfeelings	I kept my feelings about the experience to myself after it happened.	○	○	○	○	○
Beh_punishnegaff	I wanted the person who excluded me to feel the same negative emotions I had felt.	○	○	○	○	○
Beh_interactagain	I wanted to interact with the person again after that experience.	○	○	○	○	○
Beh_seelessfreq	After the experience, I wanted to see the person who excluded me less frequently.	○	○	○	○	○
Beh_pututofmind	I tried to put the experience out of mind after it happened.	○	○	○	○	○
Beh_punishfeelbad	I wanted to make the person who excluded me feel bad for how they had made me feel.	○	○	○	○	○

Page 16 - Please continue thinking about how much the following statements describe your experience <u>after being excluded</u> by the person or people you described.

For the following questions, please select "Not Applicable" if you did not have a pre-existing relationship with the person before the experience or if you never interacted with them again.

		Not at all 1	A little 2	Some what 3	Quite a Bit 4	Very Much 5	N/A 6
Beh_itneverhappened	If I was around the person who excluded me, I acted as though the previous situation had never happened.	○	○	○	○	○	X

Beh_tense	My relationship with the person was tense after the experience.	○	○	○	○	○	X
Beh_conflict	The experience led to conflict in my relationship with the person.	○	○	○	○	○	X
Beh_negeffect	The experience negatively affected my relationship with the person.	○	○	○	○	○	X
Beh_gettoknowbetter	I made an effort to get to know the person who excluded me better.	○	○	○	○	○	X
Beh_endrelationship	After the experience, I wanted to end my relationship with the person.	○	○	○	○	○	X

Page 17 – Demographics (4 items)
What is your age? _____

What is your sex?
- Male
- Female

What is your ethnicity?
- American Indian or Alaska Native
- Hawaiian or Other Pacific islander
- Asian or Asian American
- Black or African American
- Hispanic or Latino/a
- European American/Non-Hispanic White

What device did you use to complete this survey?
- Laptop or desktop computer
- Tablet
- Smartphone

Appendix L: Chatboard Paradigm Materials

STUDY NAME

Group Collaboration

DESCRIPTION

In this online research study, you will participate in a group activity with two remote team members. You will first be asked to complete an icebreaker activity where you will record a short, introductory video of yourself on your computer and share it with your team via an online chatboard. You will then respond to some general questions on your opinions of the icebreaker, your expectations for the upcoming group activity, and general demographic data such as your age and gender. You will then complete a brief collaborative activity with your group members. The study will take no more than 1 hour and you will earn 1 psychology pool credit for your participation. IMPORTANT: Please be on time for your session since you will be collaborating with other participants! Please also make sure your computer is capable of recording video prior to beginning this study. Windows users can use the Camera app and Mac users can download the Debut Video Capture Software for free.

SET-UP (FOR STUDY 4 ONLINE VERSION ONLY)

Participants are emailed a link to a survey to begin.

Page 1 – Sona ID

What is your SONA ID number? (NOTE: THIS IS NOT YOUR STUDENT ID NUMBER)

Page 2 – Study Directions

Important! You will be participating in this research study in real-time with two other participants, so please do not take any breaks from this point onward. Please make sure you are located in a quiet place by yourself where you can listen to and record audio/video of yourself without being disturbed.

Study Directions

- On the next page you will read the Informed Consent document for this study.
- You will then make sure you have video recording software installed on your computer and record a quick test video.
- Lastly, you will be directed to log on to the online chatboard where you will interact with the session researcher and your two group members and the study activities will begin.

If you have not successfully logged onto the group chatboard 10-15 minutes after your session appointment time, the researcher will call you to help guide you through the process. Please enter your preferred phone number below.

Page 3 – Informed Consent

Page 4 – Video Recording Software Test

Test Your Video Recording Software

Please make sure you have video recording software downloaded on your computer. If you do not yet have any video recording software downloaded on your computer, you can install the following free options:
For Macs:

- Navigate to the App Store
- Search for "Debut Video Capture Software"
- Install and open

For Windows:

- Search for the Camera App (should be pre-installed)
- Click the video-recording feature rather than the photo feature

Please record a brief test video of yourself reading the following line: "This is a test video." Make sure that you are visible in the video - the video should be of you rather than your screen. If possible, record yourself in front of a blank white wall or another non-distracting background.

Page 5 – Chatboard Log-in

Log into Group Chatboard

To begin your research activities with your group, follow the instructions below to sign into the online chatboard:

- Click this link [Basecamp link] to sign into the online chatboard
    - Email: participant1_depaul@outlook.com
    - Password: ******
- Click the icon that says "DePaul University"
- Click the icon that says "Research Group"
- Click the icon that says "Campfire"

CHATBOARD PARADIGM

Context	Participants believe they will be working remotely with two other participants on a group task. They are asked to introduce themselves to their team members by recording a video in response to an icebreaker prompt and posting it in real-time to an online chatboard. **The real participant records and uploads their video first, then watches the other two participants' videos.**
Introduction	**Researcher:** Hello, and thank you for participating in our study on online group collaboration! We are interested in learning more about the factors that influence how online teams cooperate. The three of you will be working together as a team today on several online activities. When you are ready to begin, please write "ready" in the chatbox. **P2:** I'm ready **Researcher:** Ok, great, let's just give it a few minutes for Participant 1 and 3 to get ready and log on. **wait for Participant 1 to post ready, THEN POST THE FOLLOWING** **P3:** Ready too **Researcher:** Awesome, thank you all for showing up to participate in this study! Before we begin, I want to ask that you do not post in the chat box unless I directly ask you to or if you are having a technical difficulty. **Researcher:** We are going to begin with a get-to-know you exercise before the three of you begin working together. You will each record a short get-to-know-you video of yourself and post it in our chat box for your group members to see. Participant 1, you will record and post your video first. Participant 2, you will record and post your video after Participant 1. Participant 3, you will follow Participant 2.
Icebreaker video prompt	**Researcher:** Here is the icebreaker prompt for your videos: *"Introduce yourself to your group members and tell them what your favorite tv show was as a kid – explain what it was about and*

	tell us what you liked about it. Feel free to share any memories you have associated with the show and please be as detailed and descriptive as possible. It's okay to write down your thoughts on paper if you want to reference them while recording. Your introductory video should be about a minute long in total." **Researcher:** Participant 1 you can go ahead and record your video. When you are done, please save the video file as "Participant 1_name of tv show" and upload it here to the chatboard. For everyone else, please be patient as it will take a few minutes for everyone to record their videos - upload speeds can also sometimes be slow.
P1 video	**The real participant (P1) records and uploads their video first** **Researcher:** Alright, thanks for uploading, Participant 1! And thank you to everyone else for being patient. Let's give everyone a moment to watch the first intro video and then Participant 2, you can go ahead and record your icebreaker video and post when you are ready.
P2 video	**P2 uploads their pre-recorded video 3 minutes after P1** **P2's video script:** *"Okay, my name is Allison. My favorite tv show as a kid was probably* ***Paige's Pages****. "Paiges" like the name, and "Pages" like paper. Paige's Pages was a show about books, and I really liked it a lot, I was a bit of a bookworm as a kid. And I think Paige was a librarian, she would come out in this little outfit– I remember it very clearly - and sit down at the start of every episode and start reading some type of made-up story. So the acting was actually very corny, but they would perform these little skits and have a lot of catchy songs to go with it – and I remember I like begged my mom one Halloween to let me dress up as Paige, but we could never find the costume so it didn't end up happening. It was kind of sad. But yeah, Paige's Pages… that was probably my favorite show."* **Researcher:** Thanks, Participant 2. Go ahead when you're ready, Participant 3.
	P3 uploads their pre-recorded video 4 min after P2. The video script varies depending on the condition, The deliberate ostracism condition was only present in Study 4.

	Control	Unintentional Ostracism	Deliberate Ostracism
P3 video	**P3 script:** *"Okay, um, let me see. My favorite tv show was probably something called* ***The Ultras,*** *I don't know if you've heard of it, but it was pretty popular back when I was in elementary school I think. It was about this group of middle school kids who all had super-powers and went on, you know, classic super hero adventures. The acting was goofy, but yeah, I liked it anyway. I remember I used to come home from kindergarten every day and I think I was probably a little young for the show, but I remember watching it with my brother – he was a little older than me. I had really kind of forgotten about it until now actually, but honestly, I have a lot of good memories of it. Oh, my name is Sarah, sorry I guess I didn't say that right at the beginning."*	**P3 script:** *"Really? I loved* ***Paige's Pages!*** *I still vaguely remember the theme song, but I'm not going to try to sing it. Um, it was really fun though! The acting was goofy, but yeah, I liked it anyway. I remember I used to come home from kindergarten every day and I think I was a little young for the show, but I remember watching it with my brother – he was a little older than me. I had kind of forgotten about it until you started describing it honestly, but I have really good memories of it. I'm happy someone else also grew up with that show! Oh, my name is Sarah, sorry, I guess I didn't say that right at the beginning."*	

Chatboard response after all videos are posted	No chatboard response	No chatboard response	**P2:** Oh hey Sarah/Austin, it sounds like we both grew up as big Paige fans haha. It's good to meet you - hopefully we'll get assigned to work on the same team for the group task **P3:** haha maybe we'll get to be a two person team! **Researcher:** Just a reminder, but please do NOT post in the chatbox unless we prompt you to **Researcher:** Thank you though, everyone, for sharing your introductory videos.
Link to survey	**Researcher:** Now that you've gotten to know each other a little bit, we're going to move to the next part of the study. Next, we have a short survey for each of you that will show you a series of statements and ask you to indicate how much you feel the statements describe you. Your answers will be completely confidential and will not be visible to your teammates. This survey will help us to better understand the psychological characteristics of your group before you begin your activities together. Please click the following link to complete the survey: [LINK]		

Appendix M: Study 3 Materials

STUDY MATERIALS

After the icebreaker activity, participants click on a link that leads to the following survey.

Page 1 – Sona ID
What is your SONA ID number?

Page 2 – Study Directions
The following questions ask about your interactions with your group members based on the get-to-know-you icebreaker videos you just watched. There are no right or wrong answers, so please use your intuition as you indicate whether you agree or disagree with the following statements. Your answers will not be shared with your group members.

Please think first about the video you watched from Participant 2. This would be the first icebreaker video you watched.

		Not at all				Very much
		1	2	3	4	5
P2_getalong	I think I would get along well with Participant 2.	○	○	○	○	○
P2_common	I think I have a lot in common with Participant 2.	○	○	○	○	○
P2_likable	Participant 2 seems likable	○	○	○	○	○
P2_gettoknow	I would like to get to know Participant 2 better.	○	○	○	○	○
P2_workagain	I would like to work with Participant 2 again if I were to participate in a follow-up study.	○	○	○	○	○
Page 3 – Now think about the second video you watched from Participant 3						
P3_getalong	I think I would get along well with Participant 3.	○	○	○	○	○
P3_common	I think I have a lot in common with Participant 3.	○	○	○	○	○
P3_likable	Participant 3 seems likable	○	○	○	○	○
P3_gettoknow	I would like to get to know Participant 3 better.	○	○	○	○	○

P3_workagain	I would like to work with Participant 3 again if I were to participate in a follow-up study.	○	○	○	○	○

Page 4 – Thoughts on Group Members (free response)
Did you have any additional thoughts or feelings about your group members?

_____

Page 5 – Feelings of Connection (3 items)

Please indicate your agreement to the following statements about the video icebreaker activity.

		Not at all 1	2	3	4	Very much 5
Connect_group	The video icebreaker activity made me feel connected to my group.	○	○	○	○	○
Connect_culture	The video icebreaker activity made me feel connected to my culture.	○	○	○	○	○
Connect_past	The video icebreaker activity made me feel connected to my past.	○	○	○	○	○

Page 6 – Thoughts on Icebreaker (free response)
Did you have any additional thoughts or feelings about the video icebreaker activity?

_____

Page 7 – Need Fulfillment Scale (19 items)
Please indicate how much the following statements describe how you feel <u>right now</u>.

Factor			Not at all 1	2	3	4	Very much 5
esteem	*E1*	I feel good about myself.	○	○	○	○	○
esteem	*E2*	My self-esteem is high.	○	○	○	○	○
esteem	*E3*	I feel liked.	○	○	○	○	○
esteem	*E4_R*	I feel insecure	○	○	○	○	○
esteem	*E5*	I feel satisfied.	○	○	○	○	○
	Page 8 – Based on your initial interactions with your group members, please think carefully about how you anticipate feeling during the upcoming group collaboration task. Answer as honestly as possible; it's okay to give your best guess.						

task	*C1*	I feel like I will have control over the course of the upcoming group tasks.	○	○	○	○	○
task	*C2*	I feel like I will have the ability to significantly alter events in the upcoming group tasks.	○	○	○	○	○
task	*C3_R*	In the upcoming tasks, I feel like I will be unable to influence the actions of the group.	○	○	○	○	○
task	*C4_R*	In the upcoming tasks, I feel like the other members of the group will decide everything.	○	○	○	○	○
task	*B1_R*	I feel like I will be disconnected from the group.	○	○	○	○	○
task	*B2_R*	I feel like I will be rejected by the group.	○	○	○	○	○
task	*B3_R*	I feel like I will be an outsider in the group.	○	○	○	○	○
task	*B4*	I feel like I will belong to the group.	○	○	○	○	○
task	*B5*	In the upcoming tasks, I feel like the other members of the group will interact with me a lot.	○	○	○	○	○
task	*M1_R*	I feel like I will be invisible to the group.	○	○	○	○	○
task	*M2_R*	I feel like I will be meaningless to the group.	○	○	○	○	○
task	*M3_R*	I feel like I will be nonexistent within the group.	○	○	○	○	○
task	*M4*	I feel like I will be important to the group.	○	○	○	○	○
task	*M5*	I feel like I will be useful to the group.	○	○	○	○	○

Page 9 – Demographics (3 items)

What is your age? _____

What is your sex?

- o Male
- o Female

What is your ethnicity?

- American Indian or Alaska Native
- Hawaiian or Other Pacific islander
- Asian or Asian American
- Black or African American
- Hispanic or Latino/a
- European American/Non-Hispanic White

DEBRIEFING

Group Collaboration (Debriefing)

You were told this study's purpose was to learn more about how people collaborate with groups in online studies. However, the real purpose of this study was to study participants' feelings about themselves and their groups after experiencing an everyday situation where they find themselves on the outside of a shared experience. Before you began the experiment, you were randomly assigned to one of two conditions: You either participated in a group icebreaker where the other two teammates shared something in common or you participated in a group icebreaker where each of the team members talked about their own distinct childhood experiences. It was important that you believed you would be working with this team in the future so that we could understand whether the icebreaker impacted your expectations for future interactions with your group.

Previous research has shown that in situations where people are explicitly excluded (i.e., being ignored in a group setting), people experience negative emotional reactions and reduced self-esteem, but we wanted to explore whether more subtle, everyday experiences of non-inclusion influenced people's psychological experience. Understanding this process will help us to better comprehend how people experience the need to belong and how they cope with instances where they lack connection with their group.

If you have any questions or comments about this experiment or would like any further information, please contact the researcher at the provided email address.

Appendix N: Study 4 Materials

STUDY MATERIALS

After the icebreaker activity, participants click on a link that leads to the following survey.

Page 1 – Sona ID

Page 2 – Attitude Towards Group Members (10 items)

The following questions ask about your interactions with your group members based on the get-to-know-you icebreaker videos you just watched. There are no right or wrong answers, so please rely on your intuition. Your answers will not be shared with your group members.

Please think first about the video you watched from Participant 2. This would be the first icebreaker video you watched.

		Not at all				Very much
		1	2	3	4	5
P2_getalong	I think I would get along well with Participant 2.	○	○	○	○	○
P2_common	I think I have a lot in common with Participant 2.	○	○	○	○	○
P2_likable	Participant 2 seems likable	○	○	○	○	○
P2_gettoknow	I would like to get to know Participant 2 better.	○	○	○	○	○
P2_workagain	I would like to work with Participant 2 again if I were to participate in a follow-up study.	○	○	○	○	○
Page 3 – Now think about the second video you watched from Participant 3						
P3_getalong	I think I would get along well with Participant 3.	○	○	○	○	○
P3_common	I think I have a lot in common with Participant 3.	○	○	○	○	○
P3_likable	Participant 3 seems likable	○	○	○	○	○

P3_gettoknow	I would like to get to know Participant 3 better.	○	○	○	○	○
P3_workagain	I would like to work with Participant 3 again if I were to participate in a follow-up study.	○	○	○	○	○

Page 4 – Thoughts on Group Members (free response)

Did you have any additional thoughts or feelings about your group members?

_____

Page 5 – Affect (12 items)

Despite not being the main focus of this study, we are also interested in knowing for future studies how much people enjoyed the icebreaker activity.

Thinking about your experience with the video icebreaker activity, to what extent did this activity make you feel…

		Not at all				Very much
		1	2	3	4	5
Neg_bad	Bad	○	○	○	○	○
Neg_sad	Sad	○	○	○	○	○
Neg_angry	Angry	○	○	○	○	○
Neg_upset	Upset	○	○	○	○	○
Neg_jealous	Jealous	○	○	○	○	○
Neg_isolated	Isolated	○	○	○	○	○
Pos_good	Good	○	○	○	○	○
Pos_happy	Happy	○	○	○	○	○
Pos_connected	Connected	○	○	○	○	○
Pos_competent	Competent	○	○	○	○	○
Pos_respected	Respected	○	○	○	○	○

Pos_proud	Proud	○	○	○	○	○

Page 6 – Thoughts on Icebreaker (free response)

Did you have any additional thoughts or feelings about the video icebreaker activity?

_____

Page 7 – Need Fulfillment Scale (19 items)

Please indicate how much the following statements describe how you feel right now.

Factor			Not at all 1	2	3	4	Very much 5
esteem	*E1*	I feel good about myself.	○	○	○	○	○
esteem	*E2*	My self-esteem is high.	○	○	○	○	○
esteem	*E3*	I feel liked.	○	○	○	○	○
esteem	*E4_R*	I feel insecure	○	○	○	○	○
esteem	*E5*	I feel satisfied.	○	○	○	○	○
Page 8 – Based on your initial interactions with your group members, please think carefully about how you anticipate feeling during the upcoming group collaboration task. Answer as honestly as possible; it's okay to give your best guess.							
task	*B1_R*	I feel like I will be disconnected from the group.	○	○	○	○	○
task	*M1_R*	I feel like I will be invisible to the group.	○	○	○	○	○
task	*C4_R*	In the upcoming tasks, I feel like the other members of the group will decide everything.	○	○	○	○	○
task	*B5*	In the upcoming tasks, I feel like the other members of the group will interact with me a lot.	○	○	○	○	○
task	*M5*	I feel like I will be useful to the group.	○	○	○	○	○

task	*C1*	I feel like I will have control over the course of the upcoming group tasks.	○	○	○	○	○
task	*M2_R*	I feel like I will be meaningless to the group.	○	○	○	○	○

Page 9 – Please continue thinking about the upcoming group collaboration task as you answer the questions below.

task	*C2*	I feel like I will have the ability to significantly alter events in the upcoming group tasks.	○	○	○	○	○
task	*B3_R*	I feel like I will be an outsider in the group.	○	○	○	○	○
task	*M3_R*	I feel like I will be nonexistent within the group.	○	○	○	○	○
task	*C3_R*	In the upcoming tasks, I feel like I will be unable to influence the actions of the group.	○	○	○	○	○
task	*B4*	I feel like I will belong to the group.	○	○	○	○	○
task	*B2_R*	I feel like I will be rejected by the group.	○	○	○	○	○
task	*M4*	I feel like I will be important to the group.	○	○	○	○	○

Page 10 – Loading Page

DO NOT CLOSE THE SURVEY

Please wait a few minutes for your team members to also finish their survey questions. You are about to begin the first group task. The next page will automatically load once it's ready.

Page 11 – Boggle Directions I

You are now going to play a short word game with your team. Your job is to identify as many words in a 4 x 4 letter grid as possible. The more words you find, the more points you earn for your team.

At the end of the game, your team will be able to see the percentage of points each person contributed to the game.

For this study, the two players who contributed the highest percentage of points for the team will go on to work together in the next game. The lowest contributor will work alone for the next game.

Click to the next page for the detailed rules of the game.

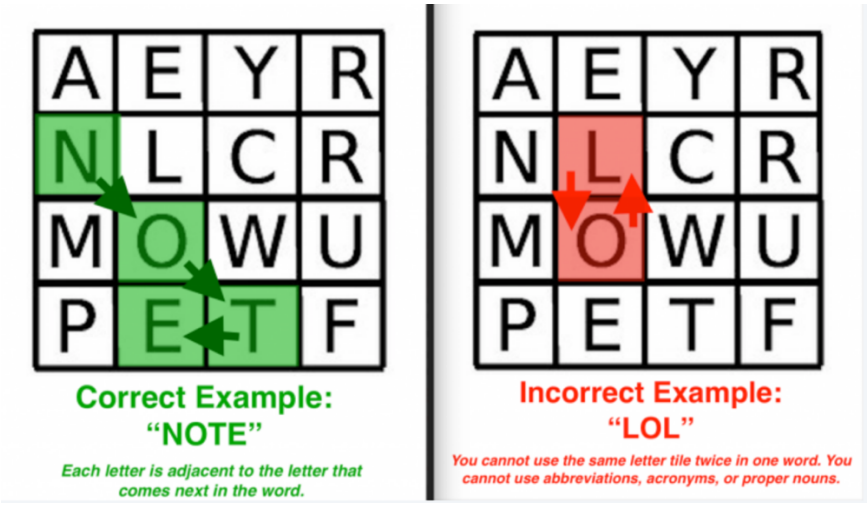
Page 12 – Boggle Directions II

Rules of Boggle:

Players have two minutes to find as many words as they can in the grid of letters. The rules are as follows:

- The letters must be adjoining in a 'chain'. Letter cubes in the chain may be adjacent horizontally, vertically, or diagonally.
- Words must contain at least three letters.
- No letter cube may be used more than once within a single word.
- No using proper nouns (e.g., "DePaul", acronyms (e.g., NASA), abbreviations (e.g., IL for Illinois), or non-English words.

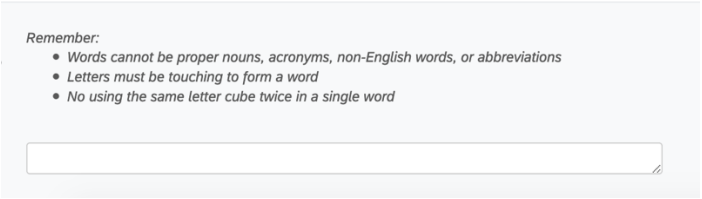
You will receive 2 pts for each word you find. Your total points will be added to your teammates' scores for an overall group score.



Remember! The two players who contribute the most points to the team will together on the next game and the lowest point contributor will work alone. When you are ready to begin the game, please click to the next page.

Page 13 – Boggle Game

Your 2-minute timer has started. Type below as many unique words as you can see in this board. Please separate each word with a comma.



Page 14 – Effort (1 item)

In a few moments, we will show you your individual and team performances on the previous game, but first we'd like to ask a few additional questions about your game experience.

		No effort at all				A lot of effort
		1	2	3	4	5
totaleffort	How much effort did you invest in your performance on the previous game?	○	○	○	○	○

Page 15 – Effort (free response)

Tell us a bit more about your answer to the last question. Why did you choose to invest that level of effort in your performance on the game? _____

Page 16 – Behavioral Responses (8 items)

Thinking about the game you just completed, please indicate how much the following statements describe your experience.

Factor	Variable Name		Not at all 1	2	3	4	Very much 5
effort	*effort*	I tried hard to do well in the game.	○	○	○	○	○
approach	*competence*	I wanted to demonstrate my skill in the game.	○	○	○	○	○
n/a	*withdraw*	I wanted to work by myself in the next game.	○	○	○	○	○
approach	*affiliate*	I wanted to work with a partner in the next game.	○	○	○	○	○
n/a	*punish*	I didn't want the other group members to work together in the next game.	○	○	○	○	○
approach	*cooperate*	I wanted the group to succeed in the game.	○	○	○	○	○
approach	*Affiliate2*	I wanted my team members to think highly of me.	○	○	○	○	○
approach	*Competenc2*	I wanted to be the best player.	○	○	○	○	○

Page 17 – Fake Performance Score

BOGGLE GAME 1 SCORES

Participant 1 contributed 37% of the game points

Participant 2 contributed 44% of the game points

Participant 3 contributed 19% of the game points

Page 18 – Time Alert

ATTENTION

There is insufficient time to complete the second group task. Please click to the next page to skip to the final wrap-up questions for the study.

Page 19 – Demographics (3 items)

What is your age? _____

What is your sex?

- Male
- Female

What is your ethnicity?

- American Indian or Alaska Native
- Hawaiian or Other Pacific islander
- Asian or Asian American
- Black or African American
- Hispanic or Latino/a
- European American/Non-Hispanic White

Page 20-23 – Study Checks (4 items)

- Please describe in your own words what you think the study was about. _____
- Did any part of this study seem weird or not make sense to you? _____
- Have you participated in any studies in previous quarters that you felt were similar to this one? If yes, very briefly describe what you did in the previous study. _____
- Did you have any technological issues while watching the introductory videos or completing the rest of the study? If yes, very briefly describe what those issues were. _____

Page 24 – Debriefing

Appendix O: Study 5 Materials

STUDY NAME

"Imagine This" (MTurk)

STUDY MATERIALS

Page 1 – Information Sheet

Page 2 – Study Introduction

Study Introduction

This research study asks you to imagine the following scenario:

- You sign up for a research study about **how online teams collaborate remotely**.
- You show up in person at the research lab, where a research assistant gets you settled at a computer. On the computer screen, **an online chatboard** with your remote team is open.
- The research assistant tells you that you will **first complete an icebreaker activity** where you will record a short, introductory video of yourself and share it with your online team via the chatboard. You will then **complete a brief collaborative activity online** with your group members.

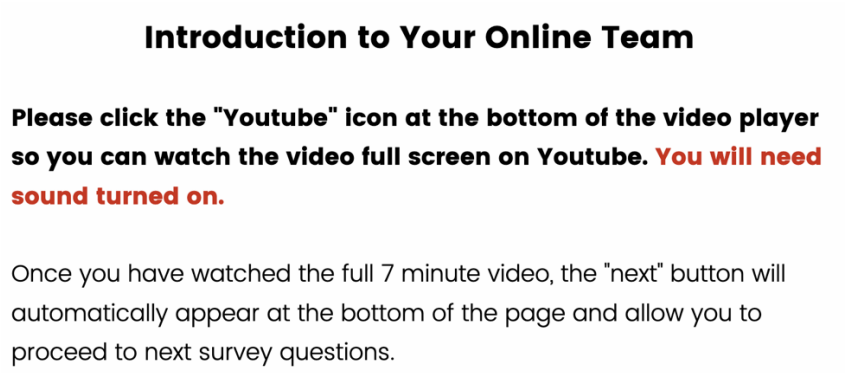
Your job in this study:

For this study, **you will not personally complete the activities just described.** Instead, **you will watch a 7-minute video recording of someone else completing these activities** with their online group and you will be asked to imagine the experience from their perspective. Afterwards, you will be asked some questions about how you would have felt in the group interaction if you had been one of the participants.

Before continuing, please briefly summarize in your own words the scenario that this study is asking you to imagine. _____

Page 3 – Directions for Video-Watching

Page 4 – Video of Chatboard Interaction (3 conditions: control vs. unintentional exclusion vs. deliberate exclusion)



Control	Unintended	Deliberate
https://www.youtube.com/watch?v=MN_SsfYgv_k&feature=emb_logo	https://www.youtube.com/watch?v=LtMASqm-0dk&feature=emb_logo	https://www.youtube.com/watch?v=70BkXFNwiHE&feature=emb_logo

Page 5 & 6 – Attention Checks (2 items)
Briefly summarize what happened in the video you watched ____

Which of the following television shows were not mentioned in the video?

- SpongeBob SquartePants
- Paige's Pages
- Pokemon

Page 7 – Valence of Interaction (1 item)

Please respond to all of the remaining questions from **the perspective of Participant 1** from the video you watched. Think about how you would think and feel about your team members if you had been Participant 1 in the interaction. *(Remember that Participant 1 was the person who uploaded their video introduction first and talked about watching SpongeBob as a child).*

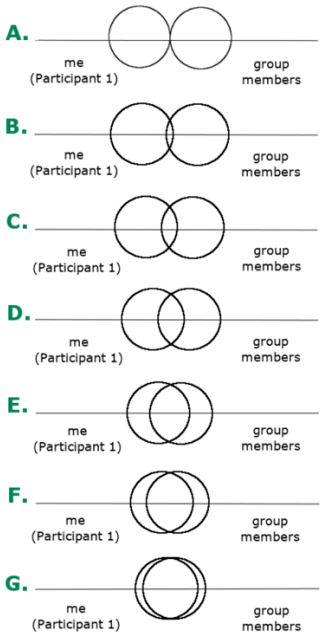
		Very negative -3	Moderately negative -2	Slightly negative -1	Neither positive nor negative 0	Slightly positive +1	Moderately positive +2	Strongly positive +3
valence	Overall, how negative or positive were your interactions with your group members in the video you watched?	○	○	○	○	○	○	○

Page 8 – IoS Scale (1 item)

Directions

Imagining you are Participant 1 in the scenario you watched, which pair of circles best represents your association with your group members?

(Note: A greater overlap in the circles in the diagram represents a closer association between you and your group members.)



Page 9 – Perceived intent, attention, & awareness (12 items)

Based on your initial interactions with your group members, indicate the extent to which you agree with the following statements. Please rely on your intuition.

Factor			Not at all 1	A little 2	Some what 3	Quite a bit 4	Very much 5
Beh	*Goodintent1*	My group members wanted me to be part of the group.	○	○	○	○	○
Beh	*Goodintent2_R*	My group members intentionally paid more attention to each other than to me during the group activity.	○	○	○	○	○
Beh	*Goodintent3_R*	My group members intended to leave me out of the group interactions.	○	○	○	○	○

Intent	*Goodintent4*	My group members didn't mean to make me feel left out of the group.	○	○	○	○	○
	Page 10						
Intent	*Unaware 1_R*	My group members were aware of how their actions during the icebreaker activity affected me	○	○	○	○	○
Beh	*Attention1*	My group members paid attention to me during the icebreaker activity.	○	○	○	○	○
Beh	*Attention2*	My group members made an effort to connect with me during the icebreaker.	○	○	○	○	○
Intent	*Unaware 2_R*	My group members were aware they were leaving me out of the group interactions.	○	○	○	○	○
	Page 11						
Intent	*Unaware 3*	My group members probably didn't realize their interactions made me feel disconnected from the group.	○	○	○	○	○
Beh	*Attention3_R*	My group members acted as though I was invisible during the icebreaker activity.	○	○	○	○	○
Beh	*Attention4_R*	My group members ignored me during the icebreaker activity.	○	○	○	○	○
Intent	*Unaware 4*	My group members didn't know that I felt left out of the group interactions.	○	○	○	○	○

Page 12 – Certainty (3 items)

		Not at all 1	A little 2	Some what 3	Quite a bit 4	Very much 5
Certainty1	I can tell what type of people my team members are.	○	○	○	○	○
Certainty2	It's clear how my team members perceive me.	○	○	○	○	○
Certainty3	I have a sense for how my team members feel about me.	○	○	○	○	○

Page 13 – Study Feedback

Was there anything we could have changed that would have improved your experience taking this survey? (This question is optional - please leave blank if you have no feedback to share)

Page 14 – Demographics (4 items)
What is your age? _____

What is your sex?
- Male
- Female

What is your ethnicity?
- American Indian or Alaska Native
- Hawaiian or Other Pacific islander
- Asian or Asian American
- Black or African American
- Hispanic or Latino/a
- European American/Non-Hispanic White

What device did you use to complete this survey?
- Laptop or desktop computer
- Tablet
- Smartphone